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NATURAL RESOURCES TECHNICAL REPORT

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ACRONYM LIST

Center for Coastal Resource Management CCRM

Center for Conservation Biology CCB

Environmental Assessment EA

Erosion & Sediment Control ESC

Estuarine Intertidal Emergent E2EM

Federal Emergency Management Agency FEMA

Federal Highway Administration FHWA

Flood Insurance Rate Map FIRM

General Purpose GP

Geographic Information Systems GIS

High Occupancy Toll HOT

High Occupancy Vehicle HOV

Hydrological unit code HUC

Information, Planning, and Conservation IPaC

Mean high water MHW

National Oceanic and Atmospheric Administration NOAA

National Environmental Policy Act NEPA

National Marine Fisheries Service NMFS

National Wetland Inventory NWI

National Wild and Scenic Rivers System NWSRS

Nationwide Rivers Inventory NRI

Palustrine Emergent PEM

Palustrine Forested PFO

Polychlorinated biphenyls PCBs

Stormwater Management SWM

Total Maximum Daily Load TMDL

Unified Stream Methodology	USM
United States Army Corps of Engineers	USACE
United States Environmental Protection Agency	EPA
United States Fish and Wildlife Service	USFWS
United States Geological Survey	USGS
United States Government Printing Office	GPO
Virginia Department of Agriculture and Consumer Services	VDACS
Virginia Department of Conservation and Recreation	DCR
Virginia Department of Conservation and Recreation, Natural Heritage Program	DCR-NHP
Virginia Department of Environmental Quality	DEQ
Virginia Department of Forestry	DOF
Virginia Department of Game and Inland Fisheries	DGIF

Virginia Department of Health

Waters of the United States

Virginia Department of Transportation

Virginia Marine Resources Commission

VDH

VDOT

VMRC

WOUS

1.0 INTRODUCTION

The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA) as the lead federal agency, and the United States Coast Guard (USCG) has initiated the Interstate 64/High Rise Bridge Corridor Study to evaluate options to improve transportation conditions along the Interstate 64 (I-64) corridor between the Interstate 464 (I-464) interchange and the Interstate 664 (I-664) and Interstate 264 (I-264) interchanges at Bowers Hill in the City of Chesapeake, Virginia (Chesapeake). Pursuant to the National Environmental Policy Act of 1969, as amended, (NEPA) and in accordance with FHWA regulations, an Environmental Assessment (EA) has been prepared to analyze the potential social, economic, and environmental effects associated with the proposed project¹.

To support the EA, this Natural Resources Technical Report was prepared to document existing resources in the study area, to evaluate the potential impacts to these resources from the proposed transportation improvements, and discuss potential mitigation for unavoidable impacts.

1.1 Description of the Study Area

The study area for the Interstate 64/High Rise Bridge Corridor Study is located in the southwestern quadrant of the Hampton Roads Beltway, which is formed by a loop of I-64 and I-664 (**Figure 1**). The study area encompasses approximately eight-miles of I-64, consisting of two travel lanes in each direction, between the I-464 interchange and the I-664 and I-264 interchanges at Bowers Hill. It includes interchanges along I-64 at Military Highway (Route 13), George Washington Highway (Route 17), and Great Bridge Boulevard (VA Route 190). The G.A. Treakle Memorial Bridge (High Rise Bridge), a milelong double-leaf drawbridge that spans the Southern Branch of the Elizabeth River, also is included in the study area.

Within the study area, I-64 connects to numerous businesses, homes, schools, and recreational opportunities throughout Chesapeake. Due to the loop that I-64 follows through the Hampton Roads region of the Commonwealth of Virginia (Virginia), I-64 West travels in an easterly direction and I-64 East travels westerly through the study area. For the purpose of this EA, I-64 will be described in terms of the road name and not the direction of the road.

The study area extends beyond the interchanges described above to ensure the impacts of any of the proposed transportation improvements are adequately documented. The study area consists of (**Figure 1**):

- Four interchanges (estimated at 3,000 feet in diameter/1,051 acres combined);
- Mainline along I-64 (100 feet on each side from existing edge of pavement estimated at 327 acres); and,
- High Rise Bridge (600 feet from the center line for a total of 1,200 feet estimated at 308 acres).

Additionally, as discussed in the *Alternatives Development Technical Report* (VDOT, 2014a), potential or estimated environmental impacts of the alternatives retained for detailed study were estimated based on the alternative's area of impact (or footprint) within the substantially larger study area. The area of

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¹ NEPA and FHWA's regulations for Environmental Impact and Related Procedures can be found at 42 USC § 4332(c), as amended, and 23 CFR § 771, respectively.

impact has been estimated for alternative comparison purposes and decision-making during the NEPA process, but would be further refined if and when an alternative advanced to design.

1.2 Alternatives Considered for Evaluation

To address the identified purpose and need of the I-64/High Rise Bridge Corridor Study (See EA Chapter 1.0), alternatives were developed, as described in the Alternatives Development Technical Report (VDOT, 2014a). Initial analysis included Eight and Ten lane Build Alternatives. Prior to the completion of this technical report, FHWA and VDOT agreed to move forward with retaining the Eight lane Build Alternatives, as they would generally provide Level of Service "C" for the majority of the study area in the design year and be consistent with FHWA's Performance Based Practical Design policy (FHWA, 2014). Details on the analyses conducted to support this decision are included in the Alternatives Development Technical Report (VDOT, 2014a) and the Traffic and Transportation Technical Report (VDOT, 2014c). Given the level of analysis that had occurred to inform this decision, data on the Eight and Ten lane alternatives are included in this technical report. Accordingly, the analyses of these alternatives are described in the following sections. Additionally, it should be noted that each of the alternatives described below would improve stormwater management, since the existing facility was constructed prior to the passage of the Clean Water Act, and thus does not have stormwater facilities to remove roadway generated pollutants. Should the project advance towards the design phase, the proposed facility would be designed to comply with both federal and state stormwater requirements in place at that time. The inclusion of stormwater management facilities into the proposed project would substantially improve stormwater runoff quality along the entire corridor.

Due to the number of possible managed lane scenarios, there have been no specific operational scenarios identified at this stage of the study. Accordingly, the following three operational scenarios were developed to establish a sample range of travel demand conditions for the Eight or Ten lane build – managed alternative: High Occupancy Vehicle (HOV), High Occupancy Toll (HOT), and All Tolled. For the purpose of this report, potential impacts associated with the Eight or Ten lane Build – Managed Alternative assume the same footprint as the respective general purpose (GP) Build Alternative. However it should be noted, of the three scenarios developed for this study, the HOV and All Tolled lane scenarios would fit within the footprint of the Build Alternative. Furthermore, if a specific managed lane scenario is identified as the Preferred Alternative, impact estimates could be updated in the Revised EA and associated technical reports.

1.2.1 No Build Alternative

In accordance with the regulations implementing NEPA (40 CFR § 1502.14(d)), the No Build Alternative has been included for evaluation in the EA to serve as a benchmark for the comparison of future conditions and impacts. The No Build Alternative would retain the existing I-64 interstate, associated interchanges and the High Rise Bridge in their present configurations, and allow for routine maintenance and safety upgrades. This alternative also assumes that the projects currently programmed and funded in VDOT's Fiscal Year 2015-2020 Six-Year Improvement Program and the Hampton Roads Transportation Planning Organization's Constrained Long Range Plan would be implemented as discussed in the *Alternatives Development Technical Report* (VDOT, 2014a) and the *Traffic and Transportation Technical Report* (VDOT, 2014c).

1.2.2 Eight Lane Build Alternative

This alternative would include construction of four additional lanes of capacity (two lanes in each direction) on I-64 within the study area. The eight lanes under this alternative are GP Lanes and are available for use without any restrictions or tolls. Wherever possible, the additional lanes would be constructed towards the existing median of I-64. The widening of I-64 to eight lanes also would require the reconstruction of I-264 ramp bridge over I-64 to the I-664 ramp; widening of I-64 bridge over Rotunda Avenue; improvements to Route 13 interchange: widening of I-64 bridges over Yadkin Road; improvements to Route 17 interchange; widening of I-64 bridge over Shell Road; extensions of the culvert along Gilmerton Deep Creek Canal; reconstruction of the High Rise Bridge (see bridge options discussed in Section 1.3); reconstruction of the Route 190 bridge over I-64; and improvements at the I-464 interchange.

1.2.3 Eight Lane Build - Managed Alternative

The Eight Lane Build – Managed Alternative would be similar to the Eight Lane Build Alternative, providing four additional lanes of capacity (two lanes in each direction) on I-64. However, some or all of the travel lanes would be managed using tolls and/or vehicle occupancy restrictions. Additionally, expanded local/express bus service or bus rapid transit could be accommodated with this alternative in the GP or the managed lanes. Numerous managed lane scenarios are possible depending on the type of strategy selected including, but not limited to, HOV lanes, HOT lanes, occupancy restrictions (at least 2 or 3 occupants), or time of day/day of week restrictions. The following three operational scenarios were evaluated to identify a sample range of potential conditions for this Build Alternative:

- HOV;
- All lanes tolled; or
- Two HOT Lanes + Two General Purpose Lanes (2 HOT / HOV-2 "free" + 2 GP).

This study does not identify what type of managed lane would be constructed. Moreover, if this alternative is identified as the Preferred Alternative, subsequent studies would be required to refine the specifics of the managed lanes throughout the study area. These specifics could include the identification of additional costs and impacts not quantified as part of this study, including those associated with providing access between the GP and managed lanes at interchanges and/or between interchanges.

1.2.4 Ten Lane Build Alternative

This alternative would include construction of six additional lanes of capacity (three lanes in each direction) within the study area. The ten lanes under this alternative are GP Lanes and are available for use without any restrictions or tolls. Wherever possible, the additional lanes would be constructed towards the existing median of I-64. The widening of I-64 to ten lanes also would require the reconstruction of I-264 ramp bridge over I-64 to the I-664 ramp; widening of I-64 bridge over Rotunda Avenue; improvements to Route 13 interchange: widening of I-64 bridges over Yadkin Road; improvements to Route 17 interchange; widening of I-64 bridge over Shell Road; extensions of the culvert along Gilmerton Deep Creek Canal; reconstruction of the High Rise Bridge (see bridge options discussed in **Section 1.3**); reconstruction of the Route 190 bridge over I-64 and improvements at the I-464 interchange.

1.2.5 Ten Lane Build - Managed Alternative

The Ten Lane Build – Managed Alternative would be similar to the Ten Lane Build Alternative, providing five continuous mainline lanes in each direction of I-64. However, some or all of the travel lanes would

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be managed using tolls and/or vehicle occupancy. Additionally, expanded local/express bus service or bus rapid transit could be accommodated with this alternative in the GP or the managed lanes. Numerous managed lane scenarios are possible depending on the type of strategy selected including, but not limited to, HOV lanes, HOT lanes, occupancy restrictions at least 2 or 3 occupants, or time of day/day of week restrictions. The following three operational scenarios were evaluated to identify a sample range of potential conditions for this Build Alternative:

- HOV;
- All lanes tolled; or
- Two HOT Lanes + Two General Purpose Lanes (2 HOT / HOV-2 "free" + 2 GP).

This study does not identify what type of managed lane would be constructed. Moreover, if this alternative is identified as the Preferred Alternative, subsequent studies would be required to refine the specifics of the managed lanes throughout the study area. These specifics could result in the identification of additional costs and impacts not quantified as part of this study, including those associated with providing access between the GP and managed lanes at interchanges and/or between interchanges.

1.3 Bridge Alternatives

1.3.1 Fixed-Span Bridge - 95 Foot - Vertical Clearance

This alternative would consist of high-level, fixed-span bridges measuring 95-feet during mean high water (MHW). This alternative would include the construction of a new bridge carrying eastbound traffic south of the existing bridge. The proposed eastbound roadway approach would be shifted south, by approximately 100 feet, to tie in with the proposed location of the new bridge. The existing I-64 drawbridge would remain in service during the construction of the new bridge but could then be demolished to build a new fixed span bridge to current design standards. Additionally, this alternative includes consideration of widening the horizontal clearance from 125-feet to 135-feet. The typical section would vary to match the mainline alternative; however, the bridge would include 14-foot wide shoulders on the inside and outside due to the high truck volume that utilizes I-64, VDOT Bridge Design Manual (VDOT, 2014b).

1.3.2 Fixed-Span Bridge - 135 Foot - Vertical Clearance

This alternative would consist of high-level, fixed-span bridges measuring 135-feet during MHW. This alternative would include the construction of a new bridge carrying eastbound traffic south of the existing bridge. The proposed eastbound roadway approach would be shifted south, by approximately 100 feet, to tie in with the proposed location of the new bridge. The existing I-64 drawbridge would remain in service during the construction of the new bridge but could then be demolished to build a new fixed span bridge to current design standards. Additionally, this alternative includes consideration of widening the horizontal clearance from 125-feet to 135-feet. The typical section would vary to match the mainline alternative; however, the bridge would include 14-foot wide shoulders on the inside and outside due to the high truck volume that utilizes I-64, VDOT Bridge Design Manual (VDOT, 2014b).

1.4 Consulting Agencies

Natural resources within the study area were identified based on agency input through the scoping process, agency meetings, review of existing available scientific literature, Geographic Information

System (GIS) databases and mapping, and field reconnaissance conducted in October and November of 2013 and in April 2014. The following agencies and groups were sent scoping letters requesting information regarding sensitive natural resources or other key environmental issues within the study area:

- Chesapeake Bay Local Assistance
- The Elizabeth River Project
- Federal Emergency Management Agency (FEMA)
- National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS)
- United States Department of Agriculture, Natural Resources Conservation Service
- United States Army Corps of Engineers, Norfolk District (USACE)
- United States Coast Guard
- United States Department of the Interior, Fish and Wildlife Service (USFWS)
- United States Department of the Interior, National Park Service
- United States Department of the Interior, Office of Environmental Policy and Compliance
- United States Environmental Protection Agency (EPA)
- Virginia Department of Agriculture and Consumer Services (VDACS)
- Virginia Department of Conservation and Recreation, Natural Heritage Program (DCR-NHP)
- Virginia Department of Environmental Quality (DEQ)
- Virginia Department of Forestry (DOF)
- Virginia Department of Game and Inland Fisheries (DGIF)
- Virginia Department of Health (VDH)
- Virginia Department of Mines, Minerals, and Energy
- Virginia Marine Resources Commission (VMRC)
- Virginia Maritime Association
- Virginia Outdoors Foundation

A more thorough discussion regarding data gathering sources and approach are presented within the discussion of each resource in **Section 2.0**, **3.0**, and **4.0**. Correspondence with the agencies and groups listed above are included in **Appendix A** of this Technical Report.

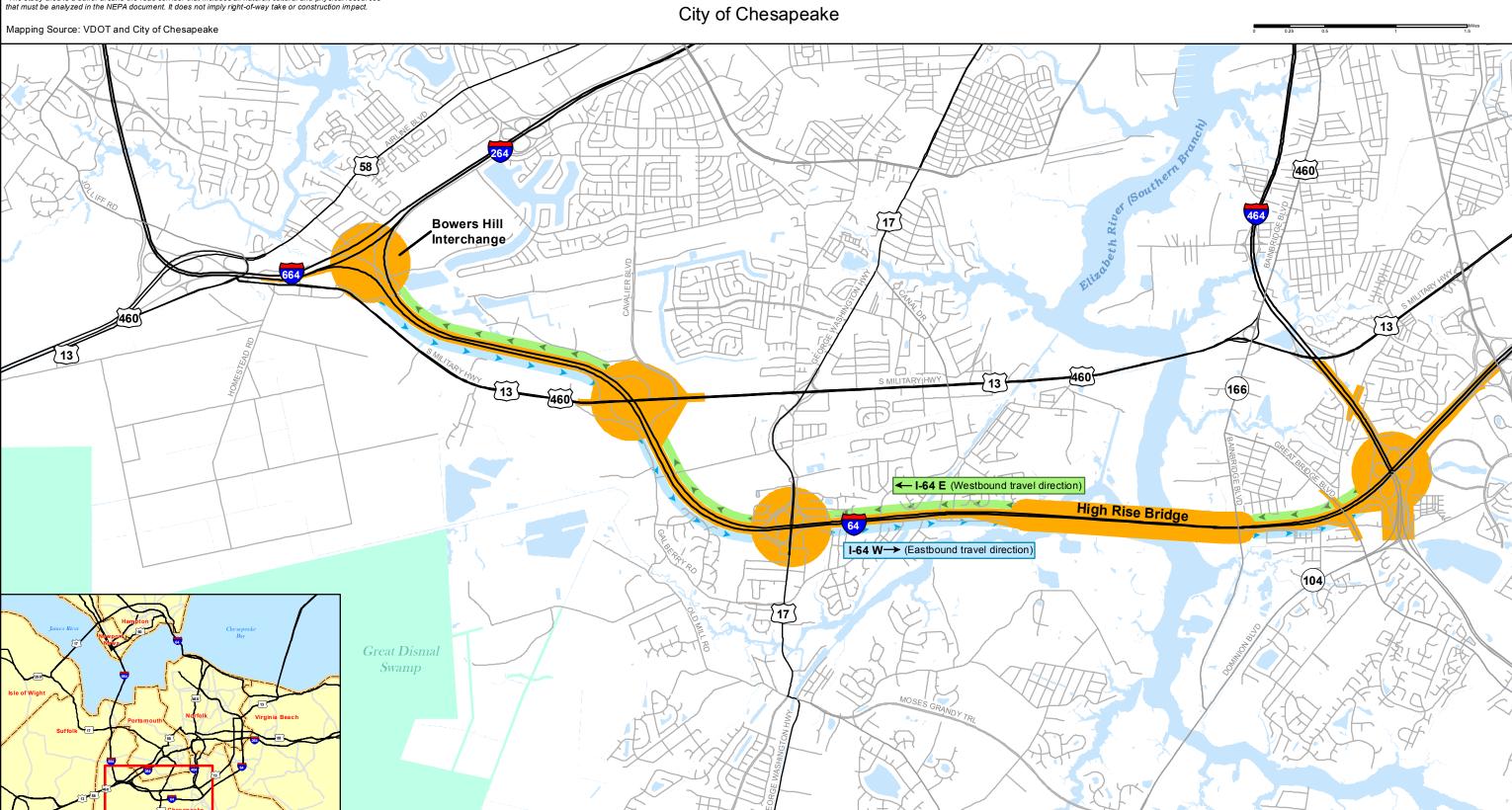
I 64/High Rise Bridge Corridor Study Area* Water Bodies Great Dismal Swamp

Figure 1 Study Area

State Project Number: 0064-131-783, P101; UPC: 104366 Federal Project Number: NH-IM-064-3(481)

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*The study area is a buffer around the road corridor that includes all natural, cultural and physical resources that must be analyzed in the NEPA document. It does not imply right-of-way take or construction impact.



2.0 AQUATIC RESOURCES

This chapter describes the aquatic resources associated with the Interstate 64/High Rise Bridge Corridor Study. The purpose of this section is to identify and analyze the environmental consequences resulting from the proposed improvements. Resources discussed include the watersheds, wetlands, streams, floodplains and water quality. Aquatic wildlife is discussed in **Section 3.0**.

In order to determine the potential effects of the proposed improvements on floodplains and Waters of the United States (WOUS), including wetlands, and other water bodies; surface waters were identified based on a review of available aerial photography, topographic maps produced by the United States Geological Survey (USGS) (USGS, 2012), USFWS National Wetland Inventory (NWI) database (USFWS, 2013A), and FEMA Flood Insurance Rate Maps (FIRMs) (FEMA, 1999).

Following initial desktop reviews, field investigations were conducted in October and November 2013 and in April 2014 to confirm the existence of streams, wetlands, and floodplains within the study area. Figure 2 illustrates the water bodies identified within the study area. The wetland areas were documented on Wetland Data Sheets in order to characterize the types of wetlands located within the study area. The Wetland Data Sheets are included in **Appendix B** of this Technical Report. Unified Stream Methodology (USM) forms were completed for field-verified non-tidal streams. The USM forms are included in **Appendix C** of this Technical Report. A formal wetland and stream delineation was not conducted, as a more detailed field review of aquatic resources would be performed if and when an alternative advanced to design. The Wetland Data Sheets and USM forms were completed for the purposes of this study and were not completed in order to initiate or facilitate a permitting process.

2.1 WATERSHEDS

Surface waters in the study area flow into either the Western Branch of the Elizabeth River or the Southern Branch of the Elizabeth River, discharge into the James River, and ultimately into the Chesapeake Bay. The *National Watershed Boundary Dataset* (USGS, 2013) was utilized to identify the watersheds within the study area. A discussion of the watersheds follows to facilitate a better understanding of the location and flow of the surface waters within the study area. Impact analyses are provided for the specific surface waters within the watershed following this section.

The *National Watershed Boundary Dataset* identifies the Elizabeth River watershed hydrologic unit code (HUC) as 0208020802 and has an area of approximately 201 square miles. This watershed is further delineated into smaller subwatersheds. There are three subwatersheds that intersect the study area and are detailed in the descriptions that follow.

2.1.1 Western Branch Elizabeth River, HUC 020802080205

The northwestern portion of the study area is located in the Western Branch of the Elizabeth River subwatershed. Surface waters in the vicinity of the Bowers Hill interchange flow north into Goose Creek. Goose Creek discharges into the Western Branch of the Elizabeth River to the north of the study area. This subwatershed is approximately 40 square miles.

2.1.2 Deep Creek-Southern Branch Elizabeth River, HUC 020802080203

The majority of the study area is located in the Deep Creek-Southern Branch of the Elizabeth River subwatershed, which is approximately 45 square miles. The direction of the surface water flow is discussed below.

- North of the Route 13 interchange, surface waters flow to the north and east toward Saint Julian Creek:
- North of I-64 and south of Route 13, surface waters flow toward the Gilmerton Deep Creek Canal, Deep Creek, and the Southern Branch of the Elizabeth River;
- South of I-64, surface waters generally flow south and east towards Deep Creek; and,
- East of the Southern Branch of the Elizabeth River, surface waters flow north and west towards Hodges Creek and Newton Creek before flowing into the river.

All surface waters in this subwatershed ultimately flow into the Southern Branch of the Elizabeth River.

2.1.3 New Mill Creek-Southern Branch Elizabeth River, HUC 020802080201

The southeastern portion of the study area is located in the New Mill Creek-Southern Branch of the Elizabeth River subwatershed. This is the smallest of the three subwatersheds, with a total area of approximately 26 square miles. Surface waters generally flow to the south and west towards Mains Creek, which discharges into the Southern Branch of the Elizabeth River.

2.2 Streams

Within each of these USGS delineated watersheds and subwatersheds, surface water drainage takes place through rivers, streams, and ditches that run through the study area. Preliminary information regarding the presence of streams was obtained from USGS topographic maps and available aerial photography. Field investigations were subsequently performed to verify the existence of streams in and around the study area. Based on the data and field investigations, GIS shapefiles were generated to calculate the total length of streams and rivers within the study area.

2.2.1 Affected Environment

Streams

The Southern Branch of the Elizabeth River, the Gilmerton Deep Creek Canal, and several streams and unnamed tributaries intersect the study area. The Western Branch of the Elizabeth River is located outside of the study area but is fed by some of these tributaries. The streams that were field verified to intersect the study area include Hodges Creek, Newton Creek, and unnamed tributaries of Goose Creek and Deep Creek. The location of each water body is illustrated in **Figure 2** and the lengths of the stream segments within the study area are listed in **Table 1**. USM forms were completed for field-verified nontidal streams and are included in **Appendix C** of this Technical Report.

Table 1: Streams Identified within the Study Area

River/Stream	Stream Lengths Within Study Area (linear feet)
Deep Creek south of the High Rise Bridge and parallel to I-64	3,700
Deep Creek north of the High Rise Bridge	1,600
Verified tidal unnamed tributary of Deep Creek north of the High Rise Bridge	950
Hodges Creek, tidal and non-tidal, north of the High Rise Bridge	3,200
Verified non-tidal unnamed tributary of Goose Creek	6,061
Verified non-tidal unnamed tributary of Deep Creek	1,527
Verified non-tidal unnamed tributary of Newton Creek	5,363

Stream field surveys characterized non-tidal tributaries within the study area associated with three named streams, including tributaries of Goose Creek located near the Bowers Hill interchange, one tributary of Deep Creek located east of the Route 17 interchange, and tributaries of Newton Creek located near the I-The stream reaches associated with tributaries of Goose Creek are generally 464 interchange. characterized as shaded through mostly mature forested areas with marginal channel conditions due to past ditching, relocations, and some erosion. Reach 8 was the least degraded stream with a healthy riparian buffer, lack of ditching, and optimal habitat. The stream reach associated with the tributary of Deep Creek is characterized as partially shaded with suboptimal channels due to some erosion, past ditching, and relocation, with a portion of the stream bank being armored with concrete and brick through a residential area. The stream reaches associated with the tributaries of Newton Creek are generally characterized as shaded from trees (except for Reach 1 that flows through the Roosevelt Memorial Park cemetery and Reach 16 that partially flows through a residential property), marginal channel condition due to ditching and relocation of the channels adjacent to roadways, and lack of extensive riparian buffers. Descriptions of each stream area reach within the study area are located within the USM forms included in Appendix C of this Technical Report. The location of each of the surveyed USM stream reaches is included in **Appendix D** of this Technical Report.

Wild and Scenic Rivers

A review of the National Wild and Scenic Rivers System (NWSRS) database reveals that, of the approximately 49,350 miles of river in Virginia, none are designated as National Wild and Scenic Rivers (NWSRS, 2013). Therefore, there are no designated National Wild and Scenic Rivers in the study area.

The Nationwide Rivers Inventory (NRI) is a listing of 3,400 free-flowing river segments in the United States that are believed to possess one or more "outstanding remarkable" natural or cultural values to be of more than local or regional significance. According to the NRI database, there are no Virginia river segments located in the study area (National Park Service, 2009).

In addition, the Virginia Department of Conservation and Recreation (DCR) maintains a list of rivers that are designated as scenic in Virginia. The Virginia Scenic Rivers Program identifies and helps to protect rivers and streams in the state of Virginia that possess outstanding scenic, recreational, historic and natural characteristics of statewide significance. According to DCR's list of Virginia Scenic Rivers (DCR, 2013A), there are no scenic rivers or streams within the study area.

Ditching

Throughout the study area there are the remnants of historical agricultural ditching, roadside ditching, and possibly ditched stream channels. The majority of the ditches in the study area do not follow the natural topography of the watershed where stream channels would have occurred historically. Chesapeake GIS data was used to identify ditching that was historically present. These features were assessed in the field to determine if they are still present and if they conveyed flow. By comparing the mapping of extensive agricultural ditches included in the Chesapeake GIS data to existing land uses, it was determined that many historical ditches appear to have been destroyed and/or relocated adjacent to the roadways during construction of I-64 and surrounding developments. Deep ditching along some sections of the interstate is 10 to 20 feet wide and up to 10 feet below the surface of the roadway. These deep roadside ditches effectively drain a large zone along their length, limiting the hydrology available to support wetlands.

Ditching within the study area may or may not be jurisdictional, depending on its origin, existing condition, and state of maintenance. This analysis did not attempt to separate jurisdictional ditches from non-jurisdictional ditches, which requires coordination with USACE. This analysis focused on identification of headwater stream channels, both ditched and not ditched, which occur in the study area. Coordination with USACE would occur as part of the permitting process to determine agency jurisdiction over ditches and all WOUS if and when an alternative is advanced to the design phase.

2.2.2 Environmental Consequences

Under the No Build Alternative, there would be no new stream impacts as a result of interstate improvements within the study area. Most of the tidal streams located within the study area are in the vicinity of the High Rise Bridge (Figure 2). As a result, most of the estimated tidal stream impacts would occur as a result of the construction of new bridge alternatives. The proposed alternatives include an Eight lane and a Ten lane alternative and two bridge height alternatives (95-foot and 135-foot), as described in Section 1.3 and in the Alternatives Development Technical Report (VDOT, 2014a). All of the new bridge alternatives would span approximately 2,800 feet across the width of the Southern Branch of the Elizabeth River and Deep Creek, similar to the existing High Rise Bridge. Estimated permanent stream impacts would result from construction of new bridge piers and abutments for the bridge structure. The piers would require piles to be driven into the river bottom, which would be the estimated permanent impact. However, the number and size of the piles would not be typically determined until final design. Assumptions were made that piers would be 20 feet in width and extend the entire width of the bridge superstructure. There would be two bridges, one for each traffic direction. The width of the bridge superstructures would be approximately 80 feet for the four lane bridge alternative and approximately 92 feet for the five lane alternative. The total area of each of the piers would be approximately 1,600 square feet for the four lane bridge alternative and approximately 1,840 square feet for the five lane alternative. It would be assumed that piers would be placed approximately 150 feet apart along the length of the bridge. Estimated permanent roadway impacts west of the bridge would affect additional tidal streams including the Gilmerton Deep Creek Canal and the western portion of Deep Creek. The portion of Deep Creek west of the bridge would be impacted by fill required for the roadway. It is anticipated that the alternatives would not impact Hodges Creek. The total estimated stream impacts from each of the alternatives are included in Table 2.

Table 2: Estimated Stream Impacts by Alternative

Alternative	No Build	8 95	8 135	10 95	10 135
Estimated Tidal River & Deep Creek Pier Impacts (acres)	0.00	1.25	1.26	1.42	1.43
Additional Estimated Tidal Streams Roadway Impacts (acres)	0.00	0.89	0.62	1.25	0.95
Total Estimated Pier and Roadway Tidal Stream Impacts (acres)	0.00	2.14	1.88	2.67	2.38
Total Estimated Non-Tidal Stream Impacts (linear feet)	0.00	5,098	5,098	5,169	5,169

The Ten lane, 95-foot high bridge alternative would have the most estimated total tidal stream/river impacts (2.67 acres) from piers and roadway fill. The alternative with the least estimated total tidal stream/river impacts (1.88 acres) from piers and roadway fill would be the Eight lane, 135-foot high alternative. The two bridge alternatives would impact approximately the same area of tidal streams as a result of the piers. The 95-foot bridge alternatives would impact more tidal river/streams area because they have fewer piers and more roadway atop fill. Approximately 5,100 linear feet of the non-tidal streams within the study area are located in interchange areas and are therefore assumed to be impacted (**Figure 2**). If and when the project moves forward into design, additional avoidance and minimization measures may be possible once the interchanges are properly identified.

2.3 WETLANDS

Preliminary information regarding the presence of wetlands was obtained from the USFWS NWI maps, inferences made based on USGS topographic maps, and the most recent 2013 aerial photography. Field investigations were completed to verify the existence of wetlands in the study area. The wetland determination was completed per USACE Regional Supplement to the USACE Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) (USACE, 2010). The wetland areas were documented on Wetland Data Sheets to characterize the types of wetlands located within the study area. The Wetland Data Sheets are included in **Appendix B** of this Technical Report. Based on this data, GIS shapefiles were generated to calculate the total acreage of wetlands. To classify identified wetlands, this report uses an abbreviated version of the classification system developed by the USFWS, which was derived from the Classification of Wetland and Deepwater Habitats (Cowardin et al., 1979).

2.3.1 Affected Environment

Field-identified wetlands fall into two wetland systems:

- Palustrine System includes non-tidal wetlands dominated by trees, shrubs, and herbaceous vegetation; and
- Estuarine System includes tidal wetlands in brackish water along the Elizabeth River, Deep Creek, Hodges Creek, and other tidal waters.

Figure 3 depicts the wetlands identified within the study area. More detailed locations of each of the surveyed wetlands and streams are depicted in **Appendix D** of this Technical Report.

Within the study area, a total of 78 wetlands were field identified covering approximately 91 acres. Approximately 49 acres of the wetlands are non-tidal. Of these non-tidal wetlands, approximately five

acres are classified as emergent (PEM) wetlands and 44 acres are considered forested (PFO) wetlands. The remaining 43 acres of wetlands are intertidal emergent (E2EM), defined by brackish tidal wetlands with primarily herbaceous vegetation. The large acreage of tidal wetlands reflects the 1,200-foot wide study corridor across the Southern Branch of the Elizabeth River and Deep Creek.

Table 3 provides a breakdown of the various classes of wetlands within the study area and is followed by a description of each.

Wetland Class	Description	Wetland Area (Acres)
PEM	Palustrine Emergent (Non-tidal herbaceous)	4.75
PFO	Palustrine Forested (Non-tidal forested)	44.07
E2EM	Estuarine Intertidal Emergent (Tidal herbaceous)	42.54
Total Wetlands wi	91.37	

Table 3: Wetlands Identified within the Study Area

Palustrine Emergent (PEM) Wetlands

There are 18 field identified PEM wetlands within the study area covering an estimated 4.8 acres. Most of these PEM wetlands are located near the Bowers Hill interchange, the I-464 interchange, and the eastern terminus of the High Rise Bridge. More detailed locations of each of the surveyed wetlands and streams are depicted in Appendix D of this Technical Report. The PEM wetlands located near the Bowers Hill interchange (Wetlands 1, 3, and 4A) are floodplain wetlands that likely are temporarily flooded during rain events and are dominated by common reed (Phragmites australis); rice cut grass (Leersia oryzoides), woolgrass (Scirpus cyperinus), giant cane (Arundinaria gigantea), and swamp rosemallow (Hibiscus moscheutos). The PEM wetlands located near the I-464 interchange (Wetlands 67, 68, 69, and 70) are temporarily flooded from surface runoff and dominated by fern flat sedge (Cyperus filiculmis), soft rush, common reed, Japanese honeysuckle, poison ivy (Toxicodendron radicans) with a small number of red maple (Acer rubrum), sweetgum (Liquidambar styraciflua), and wax myrtle (Morella cerifera) in the shrub layer. The PEM wetlands located near the eastern terminus of the High Rise Bridge (Wetlands 59, 60, and 61) are likely seasonally saturated during the winter and spring and are dominated by soft rush (Juncus effusus), giant cane, blackberry species (Rubus spp.), dog fennel (Eupatorium capillifolium), seedbox (Ludwigia alternifolia), goldenrod species (Solidago spp.) and Japanese honeysuckle (Lonicera japonica). A review of the NRCS Web Soil Survey reveals soils associated with these wetlands include Nawney silt loam, Rappahannock muck, Urban Land-Conetoe-Chesapeake-Tetotum complex, Udorthents-Urban Land complex, Munden-Urban Land complex, and Tomotley-Urban Land-Nimmo complex soils.

Palustrine Forested (PFO) Wetland

There are 17 field identified PFO wetlands within the study area covering an estimated 44.1 acres. More detailed locations of each of the surveyed wetlands and streams are depicted in **Appendix D** of this Technical Report. The forested wetlands are located near every interchange in the study area and the largest forested wetlands are located near the Bowers Hill interchange and the Route 13 interchange. The forested wetlands located near the Bowers Hill interchange (Wetlands 4, 6, and 7) are dominated by red maple, sweetgum, black gum (*Nyssa sylvatica*) in the tree stratum, lizard's tail (*Saururus cernuus*) and netted chain fern (*Woodwardia areolata*) in the herbaceous stratum, and greenbriar (*Smilax rotundifolia*) and Japanese honeysuckle in the woody vine stratum. These wetlands were predominantly mature mixed forests that are likely seasonally saturated during the winter and spring. Of the approximately 44 total

acres of non-tidal forested wetlands identified in the study area, over 25% is a single 12-acre hardwood forested wetland at the Route 13 interchange (Wetland 8). Wetland 8 is dominated by red maple, sweetgum, black gum, and water oak (*Quercus nigra*) in the tree layer and coastal sweet-pepperbush (*Clethra alnifolia*), highbush blueberry (*Vaccinium corymbosum*) and sweetbay magnolia (*Magnolia virginiana*) in the sapling stratum. This wetland is probably seasonally saturated with extensive surface ponding in the winter and spring. Soil types associated with forested wetlands include Nawney silt loam, Munden-Urban Land complex, Tomotley-Deloss complex, Tomotley-Urban Land-Nimmo complex, Udorthents-Urban Land complex, Pocaty Mucky Peat, Tomotley-Urban Land complex, and Dragston-Urban Land-Tomotley complex.

Estuarine Intertidal Emergent (E2EM) Wetland

The estuarine intertidal emergent wetlands are primarily associated with the tidal areas bordering the Southern Branch of the Elizabeth River, Deep Creek, and the Gilmerton Deep Creek Canal. There are 43 field identified E2EM wetlands covering an estimated 42.5 acres within the study area. More detailed locations of each of the surveyed wetlands and streams are depicted in Appendix D of this Technical Report. Approximately 16 of the 43 tidal wetlands encompassing 11.9 acres are designated as E2EM5 wetlands because they are dominated by common reed. The common reed is listed as a highly invasive species by DCR (2009). The E2EM5 wetlands are generally located close to the interstate and/or close to the railroad tracks near the eastern terminus of the High Rise Bridge. There are five common reeddominated wetlands located near I-64 and are associated with Deep Creek, seven adjacent to I-64 west of the Southern Branch of the Elizabeth River, and three more near Hodges Creek and the railroad tracks servicing an industrial parcel east of the Southern Branch of the Elizabeth River. These wetlands are generally characterized by 90% or more absolute cover with common reed and generally flood daily with brackish water. The remaining 26 E2EM wetlands are characterized by the following herbaceous plants: salt meadow cord grass (Spartina patens), saltwater cord grass (Spartina alterniflora), big cord grass (Spartina cynosuroides), Roemer's rush (Juncus roemerianus), and common reed. The following shrubs are also occasionally observed: groundseltree (Baccharis halimifolia), wax myrtle and Jesuit's bark (Iva frutescens). The marshes dominated by Spartina species also experience daily tidal flooding with brackish water. Soils associated with these wetlands include Munden-Urban Land complex, Nawney silt loam, Pocaty Mucky Peat, Rappahannock muck, Bojac-Urban Land-Wando complex, Wando loamy fine sand, Dragston fine sandy loam, Udorthents-Urban Land complex, and Dragston-Urban Land complex.

Approximately 1.23 acres of the 7.5-acre Chesapeake Land Development Tidal Bank is located within the study area. As of September 2014, there were 95,581.5 tidal wetland credits available (USACE, 2014). A credit is typically equal to a square foot of restored tidal wetlands. In addition to the mitigation bank, a constructed tidal wetland mitigation site was identified north of Hodges Creek within the study area. Approximately two acres of this mitigation site is located within the study area.

2.3.2 Environmental Consequences

Under the No Build Alternative, there would be no wetland impacts as a result of interstate improvements within the study area. All Build Alternatives would have impacts to both tidal and non-tidal wetlands. For each of the Build Alternatives being considered, wetlands would be impacted by roadway widening, bridge piers and abutments, interchange modifications, and SWM. Impacts to wetlands have been avoided to the greatest extent possible through the alternatives screening process, furthermore if and when the project moves forward into design, additional avoidance and minimization measures may be possible,

see the *Alternatives Development Technical Report* (VDOT, 2014a). The estimated wetland impacts were calculated for each alternative and are included in **Table 4**.

Table 4: Total Estimated Wetland Impacts by Alternative

	Alternative	No Build	8 95	8 135	10 95	10 135
	Estimated Forested (PFO) Wetland Impacts (acres)	0.00	18.34	18.34	18.38	18.38
Non- Tidal	Estimated Emergent (PEM) Wetland Impacts (acres) Estimated Total Non-Tidal Impacts (acres)		1.00	1.00	1.06	1.06
			19.34	19.34	19.44	19.44
	Estimated (E2EM) Wetland Fills Impacts (acres)	0.00	3.02	1.39	4.04	1.98
Tidal	Estimated (E2EM) Wetland Piers Impacts (acres)	0.00	0.00	0.07	0.00	0.09
Tidai	Estimated (E2EM) Wetland Mitigation Bank Impacts (acres)	0.00	0.20	0.20	0.26	0.26
	Estimated Total Tidal Wetland Impacts (acres)	0.00	3.02	1.46	4.04	2.07
	Total Wetland Impacts (acres)	0.00	22.37	20.59	23.48	21.23

Most of the estimated non-tidal wetland impacts would be to two large PFO wetlands located at the Route 13 interchange. As noted in the Alternatives Development Technical Report (VDOT, 2014a), specific interchange designs have not yet been committed to at this stage and the relatively large estimated PFO impacts are a result of the assumption that all areas within an interchange are assumed to be impacted. Should the project move forward, future designs will determine the actual impacts and how they can be avoided and mitigated. For the purposes of this study, a worst case scenario is presented and all wetlands are assumed to be impacted within the interchanges. Estimated impacts to PEM wetlands result in approximately one acre for each of the alternatives. The estimated impacts to tidal wetlands resulting from bridge piers have been calculated based upon the assumptions made in **Section 2.2.2**. The impacts to tidal wetlands beneath the bridges would result from the area of the piers, which is assumed to be 20 feet in width and extend the width of the bridge superstructure. The permanent impacts east and west of the bridges result from impacts of placing fill beneath the roadway. Additional tidal wetland impacts would result to the Chesapeake Land Development Tidal Bank property from each Build Alternative due to the relocation of existing Libertyville Road to the south. No impacts are anticipated to the wetland mitigation site identified north of Hodges Creek. Most of the estimated tidal wetland impacts would result from roadway fill impacts. As a result, the 95-foot bridge alternatives impact more tidal wetlands because they have fewer piers and more roadway atop fill. The highest estimated tidal wetland impacts (4.04 acres) would result from the ten lane, 95-foot high alternative. The lowest estimated tidal wetland impacts (1.26 acres) would result from the eight lane, 135-foot high alternative. The key difference between the impacts for the alternatives is that the wider and shorter alternatives affect more land due to having fewer piers and more roadway fill, resulting in more wetland impacts.

2.4 Permitting

If and when an alternative is advanced to design, VDOT would apply for all appropriate permits as a result of unavoidable impacts to natural resources such as wetlands and streams. The permit process would only proceed once the NEPA process is concluded, a decision document is issued, funding is

secured, and preliminary design has been completed. An Individual Permit would likely be required and would be acquired by following the Joint Permit Application process. The permit application would be developed and submitted to VMRC, which acts as the clearinghouse and forwards the application to all appropriate agencies for comment and/or permit issuance, including the USACE, DEQ, and Local Wetland Boards. Furthermore, according to the Center for Coastal Resource Management (CCRM), VMRC acts as the Local Wetland Board in Chesapeake (CCRM, 2014). Permits for grading and land disturbance, erosion and sediment control and stormwater management also would be required from the DEQ Virginia Stormwater Management Program and from Chesapeake. In order to adhere to the conditions of all permits that would be issued for this undertaking, continued coordination with all appropriate federal and state agencies would continue as necessary, prior to and during design and construction.

The bridge would be protected from accidental ship impacts by pile-like structures called dolphins. The number and size of these structures would be developed during the design process based on water depth and the design of the bridge. The dolphins would be driven into the river bottom similar to the bridge piles. The permanent impact of the dolphins to the river would be included in the permitting process and are not included in the impact analysis discussed above.

2.5 Mitigation

If and when an alternative advances to design, efforts would be made to avoid or minimize potential impacts to wetlands and streams. Mitigation involves avoiding and minimizing direct impacts, and compensating for unavoidable impacts. Non-tidal stream impacts would be compensated through purchase of stream credits or onsite restoration of degraded streams. The USM would be used to determine stream quality, assess stream impacts, and determine the compensation requirements. If mitigation includes onsite restoration or enhancement, the USM method would be used to determine whether proposed restoration would meet the mitigation requirements (USACE, 2007). Mitigation of tidal stream or river impacts would be determined during the permitting stages with the appropriate agencies during the Section 404 permitting process with VMRC, USACE and DEQ. Unavoidable impacts to wetlands from widening the existing roadway would occur as numerous wetlands have been identified adjacent to I-64. The roadway alternatives would incorporate features that avoid and/or minimize impacts to wetlands, such as constructing lanes adjacently north of existing lanes, south of existing lanes, within the median, or a combination of these. During final design, additional avoidance and minimization measures may be possible. Once the final engineering design is complete, surface water impacts would be calculated and would provide the basis upon which wetland and stream mitigation would be determined. Typical mitigation options include on-site mitigation and/or the purchase of mitigation credits. The potential mitigation option considered for this study is listed below.

2.5.1 Mitigation Credits

The purchase of wetland and/or stream mitigation credits from a commercial mitigation bank, or the use of existing credits from one of VDOT's mitigation banks, could be used to meet the mitigation requirements, if and when an alternative advances to design. For impacts to tidal wetlands, VDOT may have sufficient credits available at its Goose Creek Wetland Bank to provide mitigation for wetland impacts. For tidal and non-tidal wetland and stream credits, there are several commercial mitigation banks servicing the Hampton Roads watershed (HUC 02080208). As of April, 2014, five wetland mitigation banks had available credits that service the Hampton Roads watershed (USACE, 2014):

- Buckhorn Wetland Mitigation Bank approximately 4.28 available non-tidal wetland credits;
- Chesapeake Wetland Mitigation Bank approximately 273.69 available non-tidal wetland credits;
- Chesapeake Land Development Tidal Bank approximately 97,041.50 available tidal wetland credits;
- Lewis Farm Wetland Bank approximately 132.70 available non-tidal wetland credits; and,
- VDOT-Goose Creek Tidal Wetland Mitigation Bank approximately 119,478.20 available E2EM

 high marsh credits, 23,031.60 available tidal wetland credits, 2.06 available non-tidal wetland credits.

In addition, the proposed Steel Street Tidal Mitigation Bank may have additional tidal mitigation credits available in the HUC 02080208 area in the near future (Priest, 2014).

2.6 Floodplains

As defined by Executive Order 11988, *Floodplain Management*, a floodplain is the lowland area adjacent to a river, lake, or stream that may become inundated during a rare flooding occurrence (FEMA, 2012). FEMA defines the 100-year floodplain as the area that would be inundated by the flood event having a 1% annual chance of flooding. The 500-year floodplain is the area between the 100-year floodplain and the area having a 0.2% annual chance of flooding (FEMA, 2013). Information on floodplains within the study area was obtained from the FEMA FIRMs.

2.6.1 Affected Environment

Based on FEMA's FIRMs, 100-year floodplains have been identified within the study area and are depicted in **Figure 4.** Approximately 290 acres of 100-year floodplains and another 20 acres of 500-year floodplains are located within the study area. These floodplains are primarily located in the eastern portion of the study area, along the Southern Branch of the Elizabeth River, Deep Creek, and the Gilmerton Deep Creek Canal. The width of the floodplain extends continuously from the Gilmerton Deep Creek Canal east to Great Bridge Boulevard (VA Route 190), a distance of approximately three miles. The 100-year and 500-year floodplains also are associated with Newton Creek to the northeast of the I-464 interchange. The floodplain along a tributary to Newton Creek extends into the study area approximately 850 feet and is approximately 250 feet in width. There also are floodplains associated with Goose Creek in the western portion of the study area. The 100-year floodplain associated with a tributary of Goose Creek is located to the southwest of the Bowers Hill interchange and is approximately 2,100 feet long and approximately 900 feet in width within the study area.

These floodplains are generally characterized as having moderate commercial and industrial development, particularly adjacent to the Southern Branch of the Elizabeth River, and moderate residential development west of VA Route 190 and east of the Gilmerton Deep Creek Canal. There is little commercial and industrial development in the floodplains south and west of the Bowers Hill interchange and some residential development in the floodplains north of the Bowers Hill interchange.

2.6.2 Environmental Consequences

The relatively large area of floodplains (approximately 310 total acres) identified in the study area reflects the 1,200-foot study corridor across the Southern Branch of the Elizabeth River and Deep Creek. The width of the study area across the river is wider than would be included in the estimated impacts. **Table 5** presents the 100-year and 500-year estimated floodplain impacts by alternative.

Table 5: Total Estimated Floodplain Impacts by Alternative

Alternative	No Build	8 95	8 135	10 95	10 135	Floodplain Acreage within the Study Area
Estimated 100-year Floodplain Impacts (acres)	0.00	30.10	25.98	36.69	31.56	289.83
Estimated 500-year Floodplain Impacts (acres)	0.00	3.79	3.75	4.52	4.49	20.16

Under the No Build Alternative, there would be no floodplain impacts as a result of interstate improvements within the study area. The estimated floodplain impacts from the Build Alternatives would result from roadway fill impacts within the floodplains and from the placement of piers and abutments under the proposed bridges; the assumptions are discussed in **Section 2.2.2**. The estimated permanent impacts to floodplains beneath the bridges would result from the area of the piers, which is assumed to be 20 feet in width and extend the width of the bridge superstructure. As a result, the 135-foot bridge alternatives impact less floodplain area due to more of the bridge being constructed atop piers and less of the bridge being constructed on roadway fill.

If and when the project advances toward design, every effort would be made to avoid or minimize any potential impacts to floodplains. Encroachments resulting from the proposed improvements are not "significant encroachments", which according to 23 CFR §650.105(q) are defined as one or more of the following flood related impacts:

- Potential interruption of transportation facility needed for emergency vehicles or evacuation route;
- A significant risk; and,
- A significant adverse impact on natural or beneficial floodplain values (United States Government Printing Office (GPO), 2014).

2.7 Water Quality

Early in the planning process, VDOT began coordinating with agencies involved with water quality and drinking water sources found within the study area. Agencies that received scoping letters requesting their comments in regards to natural resources are listed in **Section 1.4**. Additionally, a number of internet databases were explored throughout September and October 2013 to identify water quality and drinking water sources, including databases from EPA, VDH, Chesapeake, and DEQ. Impaired water bodies within the study area were identified in DEQ's *Final 2012 305(b)/303(d) Water Quality Assessment Integrated Report* life (DEQ, 2012).

2.7.1 Affected Environment

In DEQ's Final 2012 305(b)/303(d) Water Quality Assessment Integrated Report, water bodies are rated on their ability to support designated uses of the water by human or aquatic life (DEQ, 2012). Impaired waters are designated as partially supporting or not supporting any of the five designated uses: aquatic life; fish consumption; shellfishing; swimming / recreation; and drinking water. The results of the impairments within several streams and river segments in the vicinity of the study area are included in **Table 6.**

Table 6: Impaired Waters in the Vicinity of the Study Area

G 0 TY	Designated Use Impairments							
Surface Water	Aquatic Life	Fish Consumption	Shellfishing	Recreation	Drinking Water			
Goose Creek	NS	NS	N/A	No Data	N/A			
Deep Creek	NS	NS	N/A	No Data	N/A			
Hodges Creek	NS	NS	N/A	No Data	N/A			
Mains Creek	NS	NS	N/A	No Data	N/A			
Southern Branch of Elizabeth River-South of I-64	NS	NS	N/A	No Data	N/A			
Southern Branch of Elizabeth River-North of I-64	NS	NS	N/A	Supporting	N/A			

Note: Data taken from Final 2012 305(b)/303(d) Water Quality Assessment Integrated Report

The surface waters in **Table 6** were listed as Not Supporting (impaired) for Aquatic Life Use because of failure to meet the criteria for concentration of dissolved oxygen established by DEQ (DEQ, 2014a). In addition, VDH issued a fish consumption advisory for polychlorinated biphenyls (PCBs) for all surface waters noted in Table 6, and for dioxins in the Southern Branch of the Elizabeth River and its tidal tributaries (except Goose Creek). The table listed shellfishing as Not Applicable as the area has been identified as a Shellfish Condemnation Zone because harvesting is not allowed (DEQ, 2014b).

In 2010, EPA mandated Total Maximum Daily Loads (TMDLs) for all states in the Chesapeake Bay watershed in order to clean up the Chesapeake Bay and achieve water quality standards (EPA, 2010). TMDLs are calculated by adding the individual wasteload allocations for point sources and load allocations for nonpoint sources. In Virginia, the Chesapeake Bay TMDLs were established by DEQ for 92 contributing surface water segments within the Chesapeake Bay watershed, including the Southern Branch of the Elizabeth River.

DEQ, which administers the Exceptional State Waters (Tier III) Program, identifies and protects high quality waters in Virginia for the benefit of future generations by prohibiting new point source discharges within the water body. There are no surface waters in the study area that are categorized as Exceptional State Waters (Tier III). The closest Tier III water body is Lake Drummond located approximately 11.5 miles to the southwest of the study area (DEQ, 2013).

Water Supply

The closest sole source aquifer is the Columbia & Yorktown-Eastover sole source aquifer located approximately 25 miles to the northeast of the study area in Northampton County (EPA, 2008). The primary sources of public water for Chesapeake comes from water purchased from Norfolk and treated at the Lake Gaston Water Treatment Plant, the Northwest River located approximately 13 miles south of the High Rise Bridge, three wells near the Hampton Roads Executive Airport located (approximately 3 miles southwest of the Bowers Hill interchange), and four public groundwater wells located along South Battlefield Boulevard (over 2 miles southeast of the I-464 interchange) (City of Chesapeake, 2012).

VDH responded to a request for information in an email dated August 30, 2013, which stated that there are no groundwater wells within approximately one mile of the study area and no surface water intakes

NS-Not Supporting

N/A-Not Applicable

located within approximately five miles of the study area. VDH also stated that the study area is not within Zone 1 (up to 5 miles into the watershed) or Zone 2 (greater than 5 miles into the watershed) of any public surface water sources.

2.7.2 Environmental Consequences

Water Quality

Under the No Build Alternative, there would be no water quality impacts as a result of interstate improvements within the study area. The facility was constructed prior to the passage of the Clean Water Act and does not include any SWM facilities. Therefore, stormwater would continue to carry roadway generated pollutants into the surrounding water resources. It is reasonable to assume that since the existing facility lacks appropriate SWM controls, the No Build Alternative could inhibit the attainment of TMDL goals for the Elizabeth River and streams within the study area.

The Build Alternatives would generate pollutants during construction and operation. Pollutants may include grease, oil, metals, nutrients, nitrogen, deicing salts, roadside vegetation management chemicals, and suspended solids. Sediment runoff produced during construction would be minimized by the production of and adherence to an approved erosion and sediment control plan. Temporary and permanent SWM measures, including SWM ponds, sediment basins, vegetative controls, and other measures, would be implemented to minimize potential degradation of water quality. These measures would reduce or detain discharge volumes and remove many pollutants. All VDOT projects on stateowned lands must comply with the Virginia Erosion & Sediment Control (ESC) Law and Regulations, the Virginia SWM Law and Regulations, the most current version of the VDOT Annual ESC and SWM Specifications and Standards, and the project-specific ESC and SWM plans. Additionally, the implementation of SWM measures along I-64 should produce notable reductions in pollutant loads targeted by the Chesapeake Bay TMDLs. Therefore, the study would not inhibit the attainment of TMDL goals for the Elizabeth River and streams in the study area. In addition, no Exceptional State Waters (Tier III) are located within the study area and therefore no impacts to these resources would be expected.

As noted in the *Alternatives Development Technical Report* (VDOT, 2014a), the existing facility was constructed prior to the passage of the Clean Water Act, and thus does not have SWM facilities to remove roadway generated pollutants. Should the project move forward into the design phase, the proposed facility would be designed to comply with both federal and state stormwater requirements in place at that time. The inclusion of SWM facilities into the study would substantially improve stormwater runoff quality compared to the existing condition because the existing roadway was constructed without SWM facilities.

Water Supply

Due to the distance to water supply resources, there would be no anticipated impacts to sole source aquifers or public drinking water sources.

3.0 WILDLIFE AND HABITAT

Early in the planning process, VDOT began coordinating with agencies involved with documented wildlife occurrences and general habitats found within the study area. Agencies that received scoping letters requesting their comments in regards to natural resources are listed in **Section 1.4**. Scoping responses from the agencies served as a guideline for further work. Throughout September and October

October 2014

2013, a number of internet databases were explored in an effort to identify protected and critical habitat areas; these included the USFWS Information, Planning, and Conservation (IPaC) system (USFWS, 2013B), the DGIF Virginia Fish and Wildlife Information Service (VaFWIS) database (DGIF, 2013), and the DCR-NHP database for the three subwatersheds that comprise the study area (DCR, 2013B). This work was followed by further agency coordination, reviews of mapping resources, and site reconnaissance.

3.1 Affected Environment

The study area encompasses both aquatic and terrestrial habitats in a suburban/urban mix of residential, commercial, and industrial land uses along I-64.

3.1.1 Terrestrial Wildlife and Habitat

Terrestrial wildlife within the study area include common mammals such as squirrels, rabbits, raccoons, groundhogs, and foxes; birds such as song birds, waterfowl and shore birds; and various reptiles and amphibians (DGIF, 2013). Habitat within the study area is limited by the range of developed land uses along and adjacent to the existing roadways and the maintenance of the interstate right-of-way. Industrial development is located along the east bank of the Southern Branch of the Elizabeth River and in the northwestern portion of the study area. Residential development is located to the northeast of the study area and in the central and eastern portions of the study area. Other than wetlands, which are addressed previously, forests are the primary wildlife habitat within the study area. Despite the relatively high level of development through the corridor, several forested areas are located within the interchanges. Given their location within an interstate facility, these areas provide limited habitat value. The sections below include discussions on these forested areas, as well as invasive species, conservation sites, and the results of searches for the presence of the bald eagles.

Forested Areas

In order to evaluate the potential impacts to large forested habitat tracts, forested areas within and immediately adjacent to the study area were identified and mapped (**Figure 5**). The forested areas were identified from aerial photography and classified as deciduous, evergreen, and mixed. Forested areas primarily characterized by evergreen trees make up approximately 110 total acres, predominately located within the eastern portion of the study area and near the High Rise Bridge. Forested areas characterized by deciduous trees are located generally in the central portion of the study area and near the High Rise Bridge and cover approximately 120 acres. The remaining 273 acres of forested areas are characterized by mixed evergreen and deciduous trees with large tracts in the central and western portions of the study area and several smaller tracts in the eastern portion.

In a letter dated September 18, 2013, DOF recommended avoidance of two forested areas due to their recreational benefits and presumed water quality benefits. The first forested area is located partially within the northwestern portion of the study area, southeast of the Bowers Hill interchange. The second forested area is located west of the High Rise Bridge and north of I-64 (**Figure 5**). Small portions of these forested areas are located within the study area. These forested areas may provide cover for wildlife for activities such as foraging for food and water, nest sites, and roosting in an urban environment along an existing interstate transportation corridor. Correspondence with the agencies is included in **Appendix A** of this Technical Report.

Invasive Species

The study area is located along an interstate highway near urbanized areas where invasive plant species are relatively common. The following highly invasive species, as listed by DCR (2009), were observed during field visits in October and November 2013: Chinese privet (*Ligustrum sinense*), Japanese honeysuckle (*Lonicera japonica*), Japanese stilt grass (*Microstegium vimineum*), multiflora rose (*Rosa multiflora*), and common reed (*Phragmites australis*).

Conservation Sites

Conservation sites are areas containing one or more rare plant, animal, or natural community and buffers or other adjacent land thought necessary for the conservation of the resource. In a letter dated September 20, 2013, DCR-NHP stated that the Great Dismal Swamp Conservation Site is located in the vicinity of the study area. DCR-NHP also stated that there are no State Natural Area Preserves under DCR-NHP's jurisdiction in the vicinity of the study area. Correspondence with the agencies is included in **Appendix A** of this Technical Report.

The closest portion of the Great Dismal Swamp National Wildlife Refuge is located approximately one mile to the south of the Route 13 interchange. Conservation sites are given a biodiversity significance ranking (1-5, 1 being most significant) based on the rarity, quality, and number of element occurrences they contain. The Great Dismal Swamp Conservation Site has been ranked as B2, which indicates it is of very high significance.

Bald Eagle

Since 2007, the bald eagle (*Haliaeetus leucocephalus*) is no longer protected under the Endangered Species Act after removal from the federal threatened and endangered species list. Bald eagles are protected under the Bald and Golden Eagle Protection Act which prohibits taking or disturbing bald eagles and their nests. DGIF and USFWS are responsible for the conservation and management of the bald eagle throughout Virginia. A September 2013 search of the VaFWIS online database indicated that the study area is not within two-miles of a known bald eagle concentration area or roost. However, three bald eagle nesting areas were denoted approximately one mile north of the Bowers Hill interchange. The nest that was most recently active was listed as active on April 25, 2011 (DGIF, 2013). As part of the USFWS IPaC system project review, bald eagle nests and concentration areas were searched in the vicinity of the study area. Two bald eagle nests were identified approximately one mile to the north of the Bowers Hill interchange (Center for Conservation Biology (CCB), 2013A). The closest bald eagle concentration areas were located approximately 15 miles to the northwest of the Bowers Hill interchange (USFWS, 2014A). The results of the VaFWIS search are included in **Appendix E** of this Technical Report.

Aquatic Wildlife and Habitat

Major aquatic resources within the study area include the Southern Branch of the Elizabeth River, Deep Creek, and the Gilmerton Deep Creek Canal. Both tidal and non-tidal waters are located within this area. A variety of aquatic species, including bivalves, fish, reptiles, amphibians, and aquatic birds reside in these surface water habitats for temporary and/or permanent habitat (DGIF, 2013). The Elizabeth River and all of its tributaries within the study area are listed by DEQ as impaired for aquatic life due to failure to meet dissolved oxygen criteria and for fish consumption due to polychlorinated biphenyls PCBs in fish tissue.

Anadromous Fish

Anadromous fish are fish that live in saltwater but return to freshwater to spawn (DGIF, 2014). Anadromous fish use areas are identified by DGIF as streams and rivers that have been used or have the potential to be used as migration pathways, spawning grounds, or nursery areas for anadromous fish. Confirmed anadromous fish use areas are those waters where anadromous fish species have been observed and are known to exist. The Southern Branch of the Elizabeth River, in proximity to the High Rise Bridge, is listed as an anadromous fish waters (DGIF, 2013). Although DGIF depicts the anadromous fish reach to terminate several hundred feet to the north of the High Rise Bridge, it would be possible that anadromous fish would be located within the area of the bridge. The VaFWIS anadromous fish use report lists the yellow perch (*Perca flavescens*) as the only confirmed anadromous species within this reach of the Elizabeth River. The yellow perch is not listed as threatened or endangered. The results of the VaFWIS search are included in **Appendix E** of this Technical Report.

3.2 Environmental Consequences

3.2.1 Terrestrial Wildlife and Habitat

Anticipated impacts to common terrestrial wildlife within the study area would be minimal as the study area is an existing roadway facility and there is ample habitat in the surrounding residential and commercial areas. Potential impacts to threatened and endangered species are included in **Section 4.0**.

Forested Areas

Under the No Build Alternative, there would be no impacts to forested areas as a result of interstate improvements within the study area. Permanent impacts to forest resources from each of the Build Alternatives would consist of conversion of forested land to either pavement or maintained herbaceous or shrub land. A total of approximately 503 acres of forested land is located within the study area. **Table 7** presents the estimated forested areas impacts for each alternative.

Alternative	No Build	8 95	8 135	10 95	10 135	Total Forested Area in the Study Area
Estimated Deciduous Forested Areas Impacts (acres)	0.00	71.42	71.16	71.14	70.84	119.88
Estimated Evergreen Forested Areas Impacts (acres)	0.00	49.78	46.27	51.43	47.11	110.41
Estimated Mixed Forested Areas Impacts (acres)	0.00	151.33	151.33	156.02	156.04	273.14
Total Estimated Forested Areas Impacts (acres)	0.00	272.52	268.75	278.59	273.98	503.43

Table 7: Estimated Forested Areas Impacts by Build Alternative

No impacts would be anticipated for the two forest resources for which DOF recommended avoidance. According to DOF, "Extensive coordination with the different agencies should continue throughout all stages of project development to reduce potential impacts to these resources. In addition, avoidance and minimization of potential impacts to the natural environment and wildlife should be considered throughout the design and construction phases of the project. Permitting of the project would also address avoidance, minimization, and compensatory mitigation measures, as needed". Correspondence with the agencies is included in **Appendix A** of this Technical Report.

Impacts to forested areas characterized with evergreen trees would occur from any of the Build Alternatives primarily in the I-464 interchange, impacts to forested areas characterized with deciduous trees would occur primarily in the Route 13 and Route 17 interchanges, and impacts to mixed forested areas would occur mainly in the Bowers Hill and Route 13 interchanges. For the purposes of this study, a worst case scenario is presented and all forested areas within interchanges are assumed to be impacted. Future forested areas impacts would be reduced if practicable based on further traffic and engineering studies. Although clearing of forested areas would include the displacement of wildlife and impact habitat, these areas generally provide limited value as they are located within an interstate facility. Most of these forested areas are isolated by the interstate and other roadways in these urban and residential areas, therefore, impacts to the movement of terrestrial wildlife through these forested areas is expected to be minimal. If and when the project moves forward into design, impacts to the forest resources would be avoided and minimized to the greatest extent practicable.

Invasive Species

Any of the alternatives under consideration could increase the spread of invasive species, particularly those species noted in **Section 3.1.** The removal and transfer of fill from barrow sites within the limits of disturbance or offsite locations could spread invasive species. The spread of invasive species would be minimized by following provisions in VDOT's Road and Bridge Specifications. These provisions require prompt seeding of disturbed areas with mixes that are tested in accordance with the Virginia Seed Law and VDOT's standards and specifications to ensure that seed mixes are free of noxious species. While the study area would be vulnerable to the colonization of invasive plant species from adjacent properties, implementation of the stated provisions would reduce the potential for the establishment and proliferation of invasive species.

Conservation Sites

There are no anticipated impacts to the Great Dismal Swamp National Wildlife Refuge due to its distance from the study area.

Bald Eagle

According to guidance from USFWS, if the action area is not within 660 feet of a bald eagle nest, than disturbance to nesting bald eagles is unlikely (USFWS, 2013B). Since bald eagle nests are located over 660 feet from the study area, it is anticipated that there would be no effects to nesting bald eagles. Also, since bald eagle roosts and concentration areas are not within the vicinity of the study area, no impacts to bald eagles would be anticipated to occur.

Aquatic Wildlife and Habitat

Anticipated impacts to common aquatic wildlife within the study area would be minimal as the study area is an existing roadway facility and there is ample habitat in the surrounding areas. Estimated impacts to streams are discussed in **Section 2.2** and water quality issues are discussed in **Section 2.7** of this document. Potential impacts to threatened and endangered species are included in **Section 4.0**. Impacts to anadromous fish are discussed below.

Anadromous Fish

Although there are no anticipated impacts to anadromous fish, continued coordination with the appropriate agencies would occur in order to reduce potential impacts to these resources. At the time of

permitting, potential construction phase impacts would be addressed through time of year restrictions and/or special conditions that would reduce the likelihood of impacts to anadromous fish.

4.0 THREATENED AND ENDANGERED SPECIES

Early in the planning process, VDOT began coordinating with agencies involved with federal and state listed threatened and endangered species. Agencies that received scoping letters requesting their comments in regards to natural resources are listed in **Section 1.4**. Scoping responses from the agencies served as a guideline for further work. Throughout September and October 2013, a number of internet databases were explored in an effort to identify supplementary federal and state listed species; these include the USFWS IPaC system (USFWS, 2013B and 2014A), the DGIF VaFWIS database (DGIF, 2013), and the DCR-NHP database for the three subwatersheds that comprise the study area (DCR, 2013B).

Table 8 depicts the threatened and endangered species that can be found within two miles of the study area according to the database searches conducted. In addition, descriptions of the listed threatened and endangered species and their habitat requirements are provided below.

Common Name	Scientific Name	Status
canebrake rattlesnake	Crotalus horridus	State Endangered (SE)
Dismal Swamp southeastern shrew	Sorex longirostris fisheri	State Threatened (ST)
peregrine falcon	Falco peregrinus	State Threatened (ST)

Table 8: Threatened and Endangered Species within Two Miles of the Study Area

In addition to the above listed species identified in the database searches, there are two additional species that are included in this report: the federally listed Atlantic sturgeon (*Acipenser oxyrinchus*) and northern long-eared bat (*Myotis septentrionalis*). Sturgeons occur in tidal waters and lower reaches of non-tidal tributaries in coastal Virginia. Although the portion of the Southern Branch of the Elizabeth River that is contained within the study area is not known to be suitable habitat for the sturgeon, it is possible that the species could move through the area.

Although it is not presently a federally listed species, the northern long-eared bat was proposed for federal listing on October, 2013 as endangered under the Endangered Species Act. A final decision to list the species is expected by April, 2015. As a result, a discussion of the northern long-eared bat is included in this document.

According to DCR-NHP, impacts to documented state listed threatened and endangered plants or insects would not be anticipated. In addition, there were no listed plants or insects identified within the study area in any databases that were searched.

4.1 Endangered Species

4.1.1 Affected Environment

According to the USFWS IPaC system, no federally-listed threatened or endangered species occur in the study area (USFWS, 2013B). However, the VaFWIS database denoted one state listed endangered species within two miles of the study area, the canebrake rattlesnake (*Crotalus horridus*) (DGIF, 2013). The DCR-NHP database also identifies the canebrake rattlesnake as existing within the subwatersheds (DCR, 2013B). The results of the USFWS search are included in **Appendix F** of this Technical Report. The results of the VaFWIS search are included in **Appendix E** of this Technical Report. The results of the DCR-NHP subwatershed search are included in **Appendix G** of this Technical Report.

Canebrake rattlesnake (Crotalus horridus)

According to NatureServe (2013) the conservation status of the Coastal Plain population of the canebrake rattlesnake in Virginia is S1--critically imperiled. Their diet is largely made up of the grey squirrel (*Sciurus carolinensis*) and other small rodents and birds. The canebrake rattlesnake population is listed as state endangered. The population of this species is declining primarily due to habitat loss. According to DGIF's Canebrake Rattlesnake Conservation Plan (DGIF, 2011), the average habitat area required by this species ranges from approximately 45 acres for females to over 200 acres for males.

Preferred habitat of the canebrake rattlesnake includes mature hardwood and mixed hardwood-pine forests, forested cane thickets, and ridges adjacent to swampy areas (DGIF, 2011). Canebrake rattlesnakes were not confirmed by DGIF to be located within the study area, but were confirmed to be located in several areas approximately 3,000 feet to the west of the Bowers Hill interchange, as shown on **Figure 6.**

Predicted habitat for the canebrake rattlesnake was identified within the study area (DGIF, 2013). Mature hardwood and hardwood-pine forests occur within the study area, particularly within the Bowers Hill interchange, the Route 13 interchange, and within and adjacent to the I-64 mainline in the western portion of the study area. Therefore, a search was performed for large, contiguous forested areas that could provide potential canebrake rattlesnake habitat within the study area.

Three large forested areas were identified. The first forested area is approximately 45 acres and bound to the west by the Bowers Hill interchange, to the south by I-64 and Grand Isle Drive, and to the north by I-264. The second forested area is 71 acres, and is characterized by both mature deciduous and mixed forested areas located southeast of the Route 13 interchange and north of a large industrial complex. The third forested area is approximately 37 acres and characterized by mixed mature trees identified north of I-64 and west of the Route 17 interchange and south and east of a power substation. According to DGIF's Canebrake Rattlesnake Conservation Plan (DGIF, 2011), the average habitat area required by this species ranges from approximately 45 to over 200 acres. Highways are a direct source of canebrake rattlesnake mortality and the rattlesnake habitats are effectively fragmented by highways (DGIF, 2011). Therefore, despite the presence of large forested areas, it is unlikely that canebrake rattlesnakes would be located in the median or in an interchange cloverleaf of the study area.

Atlantic sturgeon (Acipenser oxyrinchus)

In 2012, the Atlantic sturgeon was listed as federal endangered and also is listed as state endangered. Three databases were searched for threatened and endangered species, including the Atlantic sturgeon, in the vicinity of the study area. No federally-listed species were identified in the study area according to

the USFWS IPaC system (USFWS, 2013B). Although a search of the VaFWIS database, maintained by DGIF, listed the Atlantic sturgeon in the Biota of Virginia database, the sturgeon is not listed as confirmed in the Species Observation database within two-miles of the study area. The closest reach of the Elizabeth River where the Atlantic sturgeon is listed in the Species Observation database is approximately six miles to the north of the study area, near the confluence of the Western Branch of the Elizabeth River and the Elizabeth River. The sturgeon has not been observed in the Southern Branch of the Elizabeth River or the Eastern Branch of the Elizabeth River, but has been located approximately 5 ½ miles north of the study area, according to the VaFWIS database (DGIF, 2013). Also, the DCR-NHP database was searched for the three subwatersheds that comprise the study area and the Atlantic sturgeon was not listed as present in any of the three subwatersheds (DCR, 2013B).

The Atlantic sturgeon is an anadromous fish that spends most of its life in salt water near the Chesapeake Bay in this area of the mid-Atlantic, and spawns in freshwater (USFWS, 2014B). The Atlantic sturgeon has been documented to spawn near Richmond, Virginia in the James River (Balazik, 2012). Spawning occurs in deep parts of large rivers with cold, clean water on a hard surface substrate such as cobbles and bedrock to which their highly adhesive eggs can attach (National Atmospheric and Atmospheric Administration (NOAA), 2014). Since the Southern Branch of the Elizabeth River in the vicinity of the study area is characterized by brackish waters with sandy substrates, spawning by Atlantic sturgeon would be unlikely. However, it may be possible that transient individuals could be found in the Southern Branch of the Elizabeth River.

Northern long-eared bat (Myotis septentrionalis)

According to USFWS, the northern long-eared bat may be located in the vicinity of the study area (USFWS, 2014A). However, there were no records of the northern long-eared bat within the study area (DGIF, 2013; DCR, 2013B). The northern long-eared bat's range covers the eastern United States, including Virginia. It hibernates between mid-fall through spring in underground caves, mines and cavelike structures. Summer habitat ranges from mid-May through mid-August and includes a wide variety of forested/wooded habitat with varying canopy closure. Suitable roosting trees are typically greater than three inches in diameter at breast height and can be both living or dead having cracks, crevices and peeling bark (USFWS, 2014C). The northern long-eared bat has also been documented to roost in manmade structures such as bridges in the summer between Mid-May and mid-August (USFWS, 2014D).

As discussed in **Section 3.1**, there are a total of approximately 503 acres of forested areas within the study area. Evergreen forested areas make up approximately 110 total acres, primarily within the eastern portion of the study area and near the High Rise Bridge. Deciduous forested areas are located generally in the central portion of the study area and near the High Rise Bridge and cover approximately 120 acres. The remaining approximately 273 forested acres are characterized by mixed evergreen and deciduous trees with large tracts in the central and western portions of the study area and several smaller tracts in the eastern portion. These forested areas may provide suitable summer habitat for the northern long-eared bat.

4.1.2 Environmental Consequences

Canebrake rattlesnake (Crotalus horridus)

Although the canebrake rattlesnake is unlikely to exist within the study area, impacts to potential forested habitats would be limited. Under any of the proposed alternatives, a relatively small portion of the 37-acre forested property identified north of I-64 and west of the Route 17 interchange would be potentially

impacted. Also, impacts are not anticipated to the northern portion of the off ramp of I-64 to I-264 adjacent to the 45-acre forested area located east of the Bowers Hill interchange.

Atlantic sturgeon (Acipenser oxyrinchus)

In order to evaluate the potential impact of construction activities, such as pile driving, on sturgeon, a biological opinion document was reviewed that was prepared for the replacement of the Richmond-Dresden Bridge on Route 197 in Maine for the Maine Department of Transportation (NOAA, 2012). The study was conducted by NMFS for FHWA in 2012 for a new 1,400-foot long bridge. Potential impacts to the Atlantic sturgeon and the shortnose sturgeon (*Acipenser brevirostrum*) were evaluated. It was anticipated that no effects on the sturgeon would occur from a vibratory hammer while installing piles. However, this study found the use of an impact hammer during pile driving or installation of coffer dams would generate sufficient sound under water to cause changes in behavior (i.e. swimming away from construction zone) if sturgeon were present. Effects from a hoe ram used during demolition of existing piers was not expected to cause behavior modification (such as swimming away) at a distance of 200 feet or more from the source.

Given that Atlantic sturgeon are not documented within the study area and are not known to breed in the study area, impacts to the Atlantic sturgeon would not be anticipated. Although it is possible that transient individuals could be located within the study area, it would be anticipated that sounds produced by the project would cause the sturgeon to avoid the construction activities. Mitigation measures such as employing cushions and blocks during impact hammer usage, daily work limits, bubble curtains, and being vigilant for sturgeon entrapment in cofferdams with immediate release of individuals, would reduce potential impacts from this project to the Atlantic sturgeon.

Northern long-eared bat (Myotis septentrionalis)

The northern long-eared bat prefers to roost in the summer in caves or mines, underneath the bark of trees or in cavities or crevices in live or dead trees. Since there are approximately 503 acres of a wide variety of forested/wooded habitat within the study area, it is possible that summer populations of the northern long-eared bat could be supported. Direct impacts to the northern long-eared bat populations could be avoided by delaying any clearing of forested areas until late fall or winter when the bats are hibernating outside of the study area in mines and caves. Construction activities may mitigate for potential roosting bats in bridges by excluding bats from the structure by allowing the bats to exit, but not re-enter the roost areas, educating construction workers about how to identify and avoid disturbances to bats where practicable, and potential time of year restrictions to avoid construction on bridges during the summer roosting months (Keeley and Tuttle, 1999).

4.2 Threatened Species

4.2.1 Affected Environment

The VaFWIS database denoted the following state listed threatened species within two miles of the study area: the Dismal Swamp southeastern shrew (*Sorex longirostris fisheri*) and the peregrine falcon (*Falco peregrinus*) (DGIF, 2013). The DCR-NHP database was searched for the three subwatersheds that comprise the study area (DCR, 2013B). The database results identified the same two state listed threatened species as the VaFWIS database, the Dismal Swamp southeastern shrew and the peregrine falcon. The results of the VaFWIS search are included in **Appendix E** of this Technical Report. The results of the DCR-NHP subwatershed search are included in **Appendix G** of this Technical Report.

Dismal Swamp southeastern shrew (Sorex longirostris fisheri)

According to NatureServe (2013) the Dismal Swamp southeastern shrew is a habitat generalist that feeds on small invertebrates. The shrew is often found in habitats of the Great Dismal Swamp that are not permanently flooded such as areas with ground litter and moist organic soils in early to mid-successional forest, old clearcuts, and areas with thick undergrowth. In a letter dated September 20, 2013, DCR-NHP stated that early successional stage forests with dense understories support the largest numbers of Dismal Swamp southeastern shrews. Threats to this species primarily include habitat loss resulting from wetland drainage and land development.

According to the VaFWIS website (DGIF, 2013), there are two records of the Dismal Swamp southeastern shrew being observed to the west of the study area, as shown on **Figure 6.**

Predicted habitat is generally located south of Route 13 near the western portion of the study area and south of I-64 generally from Route 17 west-northwest to the railroad tracks south of Yadkin Road. DCR-NHP recommended a habitat assessment for the Dismal Swamp southeastern shrew in a 0.5 mile section from 0.25 mile north to 0.25 mile south of the junction of I-64 and Route 13 and in the powerline and adjacent wetlands approximately one mile to the west (**Figure 6**). The powerline and adjacent wetland area were field reviewed in November 2013. The powerline area was cleared, mowed and maintained adjacent to existing industrial use areas. The wetland had been cleared, grubbed, graded, grassed, and mowed. Therefore, the powerline and wetland area is not suitable Dismal Swamp southeastern shrew habitat.

Peregrine falcon (Falco peregrinus)

According to the CCB, peregrine falcons breeding in Virginia are centered on the Coastal Plain (CCB, 2013B). According to VDOT records, there is a peregrine falcon nest box on the High Rise Bridge that was occupied with two adults and active with young in the nest in March 2014. The chicks were to be released in Shenandoah National Park when the chicks are old enough to leave the nest.

4.2.2 Environmental Consequences

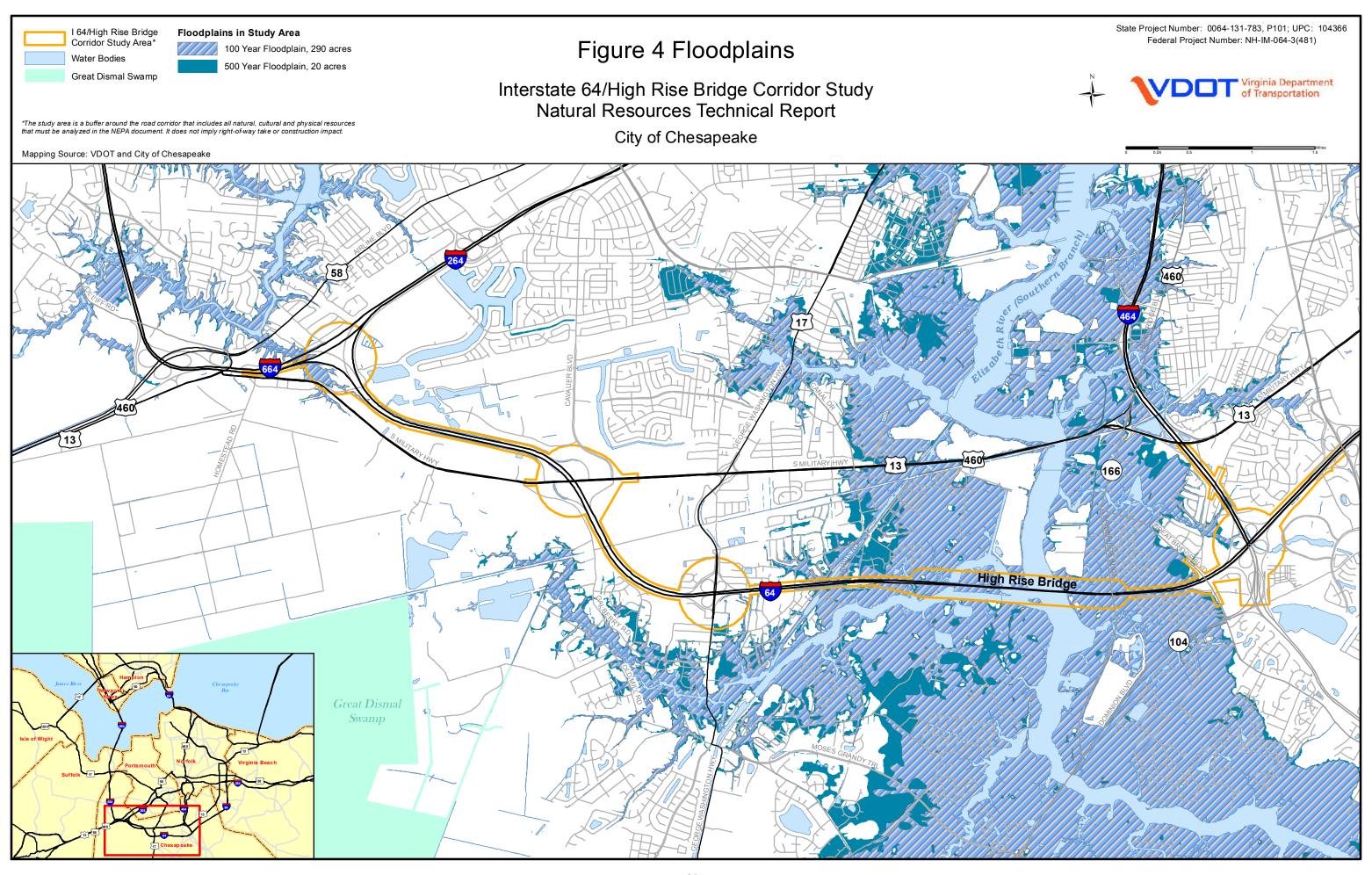
Dismal Swamp southeastern shrew

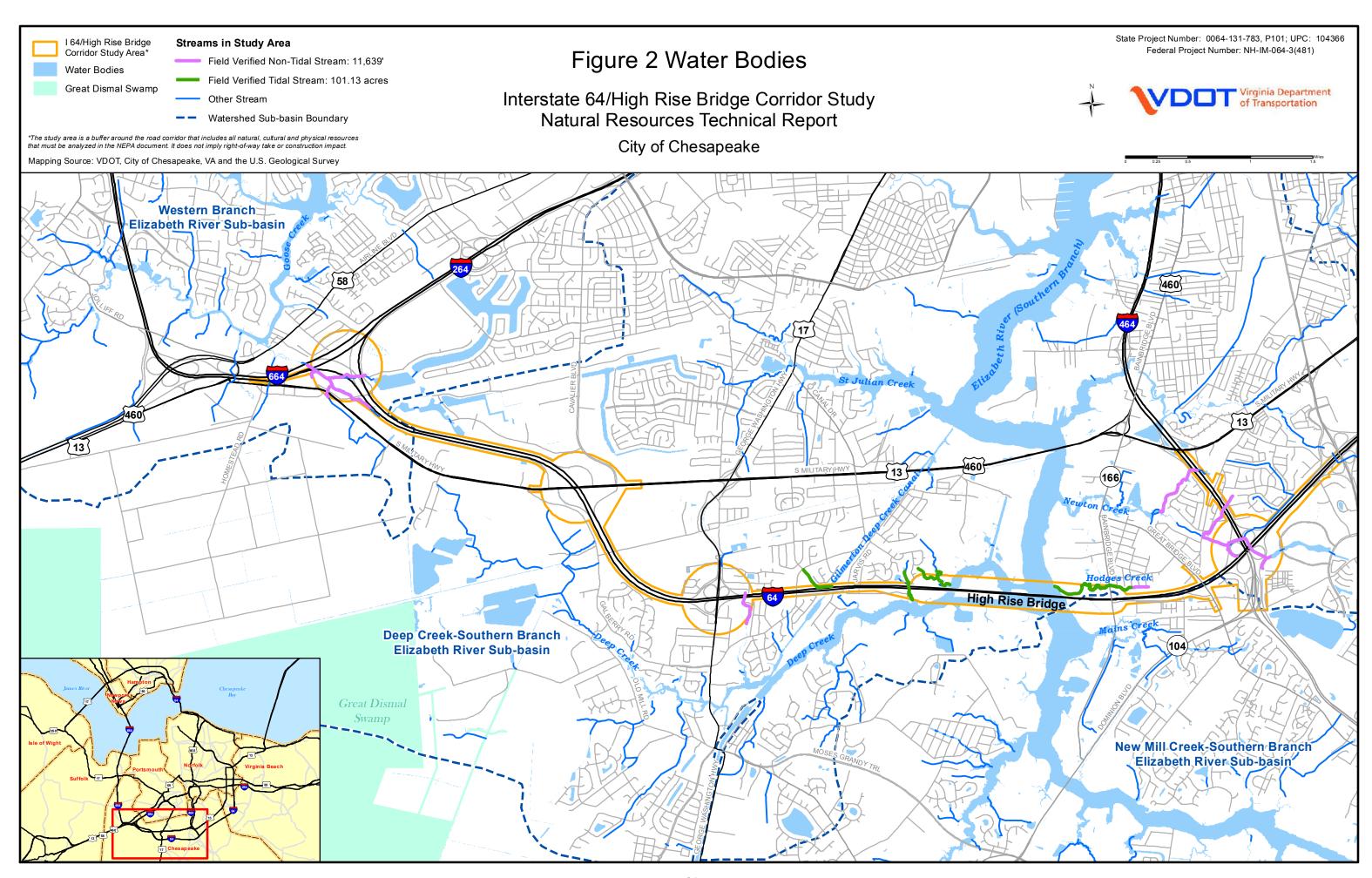
There are no known records of the Dismal Swamp southeastern shrew within the study area. The majority of the vegetation within the study area is either maintained grass or mature forest, neither which are likely habitat for the Dismal Swamp southeastern shrew. In addition, the field-reviewed powerline and adjacent wetland area identified by DCR-NHP as potential habitat was determined not to be likely habitat. Therefore, impacts to the Dismal Swamp southeastern shrew are not anticipated.

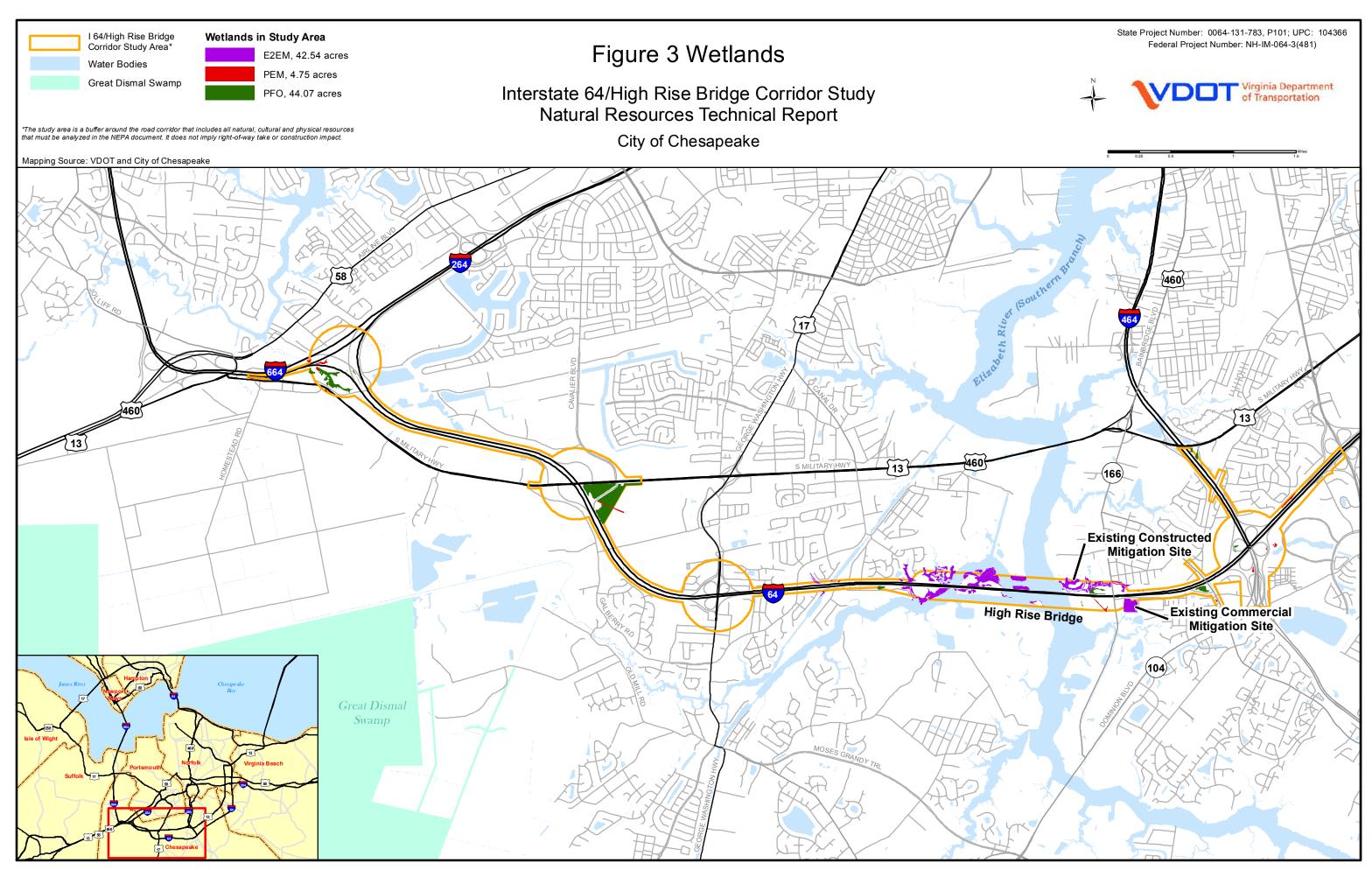
Peregrine falcon

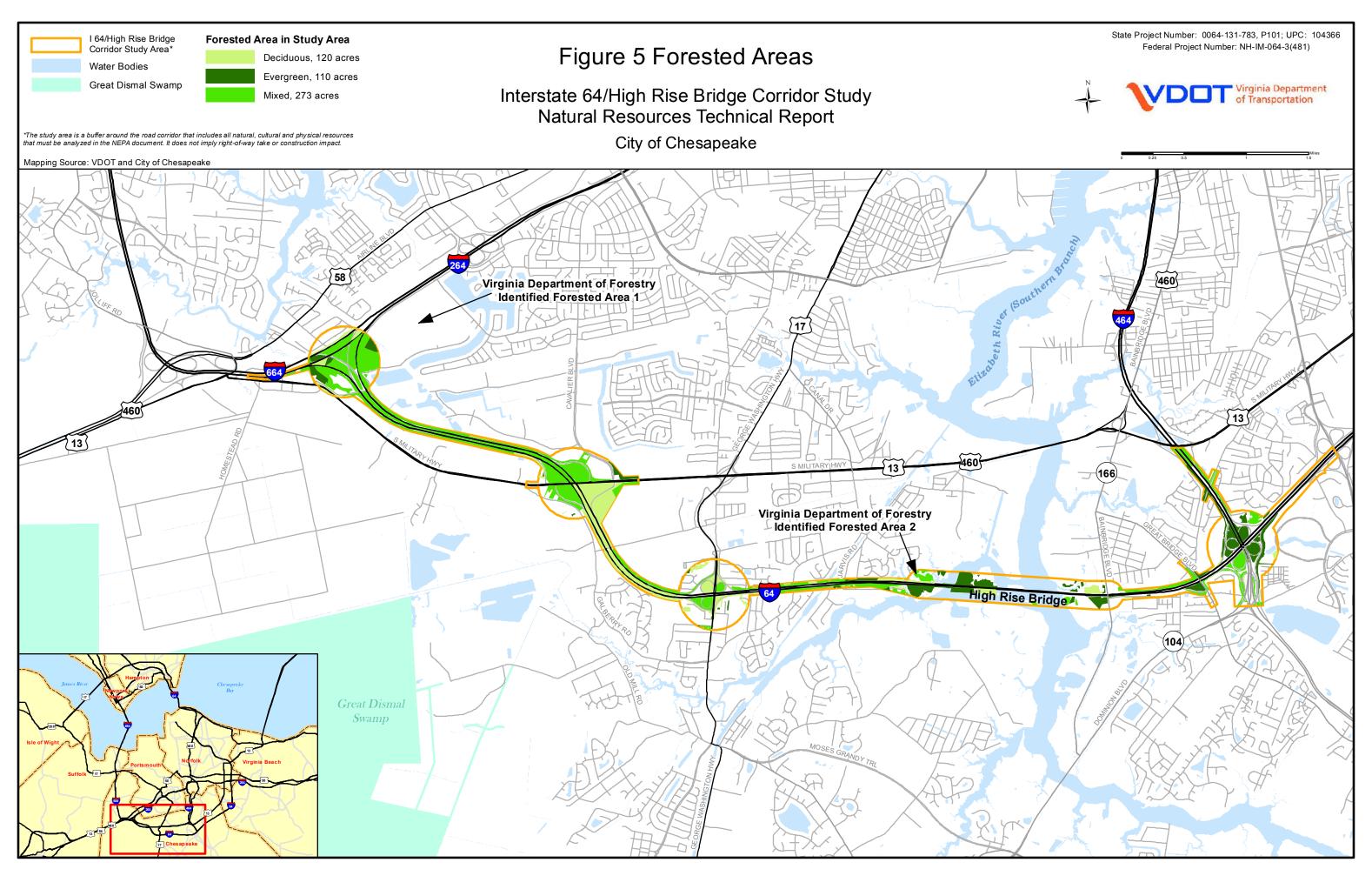
An active peregrine falcon nest box exists on the High Rise Bridge. The nest site may continue to be utilized until such time as the existing bridge is removed and/or a new nest site is located on the new bridge and/or alternative nesting structures such as platforms are provided. VDOT would coordinate with all appropriate agencies if and when the study advanced to design and construction, and schedule removal of the existing nest box outside of the breeding/nesting season, and the installation of nest boxes on new bridges during the appropriate time of year so as to not disturb the nesting activities and breeding season which would minimize impacts to the peregrine falcon.

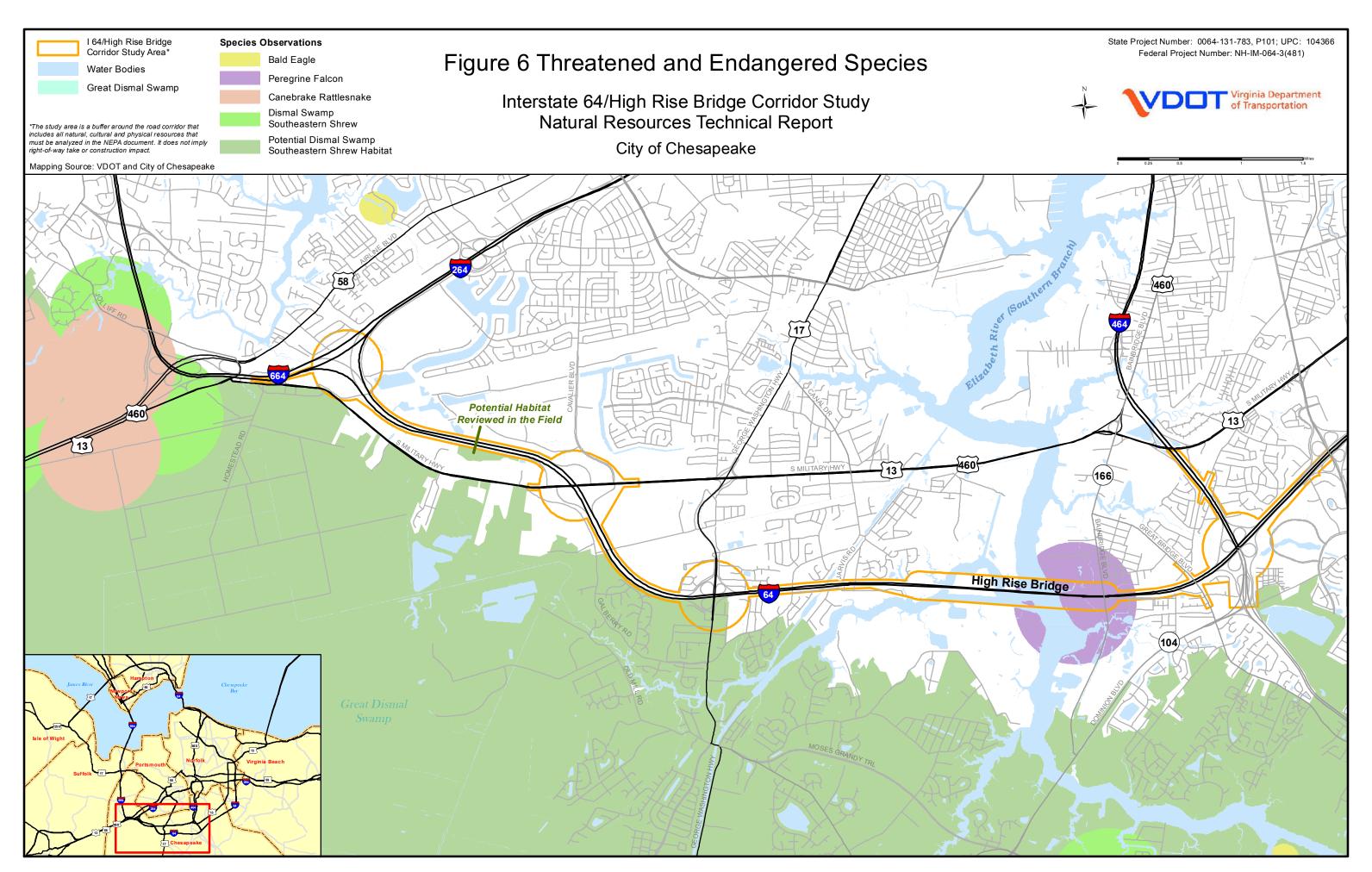
As no federally listed threatened and endangered plant or animal species were confirmed to exist within the study area, none of the proposed alternatives would be expected to affect federally listed threatened and endangered species. VDOT cooperates with state authorities in an effort to identify and conserve state listed species whenever feasible. With the incorporation of best management practices, impacts to rare, threatened and endangered species that may be located in the vicinity of the study area would be avoided to the greatest extent practicable. A more detailed assessment of impacts and minimization efforts would be performed during final design, once an alternative has been selected.











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<u>MEMORANDUM</u>

DATE: September 20, 2013

TO: Scott Smizik, VDOT

FROM: Alli Baird, DCR-DNH

SUBJECT: Due September 25, 2013

0064-131-783, P101, Interstate 64 Widening and High Rise Bridge Replacement Study

The Department of Conservation and Recreation (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Great Dismal Swamp Conservation Site is located in the project vicinity. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Great Dismal Swamp Conservation Site has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resource of concern at this site is:

Sorex longirostris fisheri Dismal Swamp southeastern shrew G5T4/S2/NL/LT

The Dismal Swamp southeastern shrew occurs from southeastern Virginia to southeastern North Carolina along the outer coastal plain (U.S. Fish and Wildlife Service, 1998). They occupy a wide variety of habitats, including recently clearcut and regenerating forests, young pine plantations, grassy and brushy roadsides, young forests with shrubs and saplings, and mature pine and deciduous forests. Early successional stages with dense understories support the largest numbers of Dismal Swamp southeastern shrews, but mature pine plantations and mature second growth hardwood forests can also have significant numbers, particularly if there is a dense understory. Despite the lower densities in mature forests, these habitats are likely to be important to the long-term survival of Dismal Swamp southeastern shrew populations (U.S. Fish and Wildlife Service, 1998).

Threats to the Dismal Swamp southeastern shrew include draining and drying of its preferred habitat which allows the more upland *Sorex longirostris longirostris* to invade and compete against it (Rose and Padgett, 1991). Please note that this species is currently classified as threatened by the Virginia Department of Game and Inland Fisheries (VDGIF).

Due to the potential for this site to support populations of Dismal Swamp southeastern shrew, DCR recommends a habitat assessment for the resource in a 0.5 mile section from 0.25 mile north to 0.25 mile south of the junction of I-64 and US Rt. 13/460 and in the powerline and adjacent wetlands approximately

one mile to the west.. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources. Due to the legal status of Dismal Swamp southeastern shrew, DCR also recommends coordination with Virginia's regulatory authority for the management and protection of this species, the VDGIF, to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

DCR-Division of Natural Heritage biologists are qualified and available to conduct inventories for rare, threatened, and endangered species. Please contact J. Christopher Ludwig, Natural Heritage Inventory Manager, at chris.ludwig@dcr.virginia.gov or 804-371-6206 to discuss arrangements for field work.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

All VDOT projects on state-owned lands must comply with the Virginia Erosion & Sediment Control (ESC) Law and Regulations, the Virginia Stormwater Management (SWM) Law and Regulations, the most current version of the DCR approved VDOT Annual ESC and SWM Specifications and Standards, and the project-specific ESC and SWM plans. [Reference: VESCL §10.1-560, §10.1-564; VESCR §4VAC50-30 et al; VSWML §10.1-603 et al; VSWMR §4VAC-3-20 et al].

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters, that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis, or contact Gladys Cason (804-367-0909 or Gladys.Cason@dgif.virginia.gov). This project is located within 2 miles of a documented occurrence of a state listed animal. Therefore, DCR recommends coordination with VDGIF, Virginia's regulatory authority for the management and protection of this species to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

Thank you for the opportunity to comment on this project.

Cc: Amy Ewing, VDGIF

Literature Cited

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Carl E. Garrison III State Forester



COMMONWEALTH of VIRGINIA

DEPARTMENT OF FORESTRY

900 Natural Resources Drive, Suite 800 Charlottesville VA 22903 434.977.6555 ~ Fax: 434.296.2369 www.dof.virginia.gov

September 18, 2013

TO: Scott Smizik, VDOT Project Manager

FROM: Greg Evans, VDOF

SUBJECT: Interstate 64 Widening and High-Rise Bridge Replacement Location Study, City

of Chesapeake

VDOT Project Number 0064-131-783, P101; UPC: 104366

I am writing in response to your August 26, 2013 letter to Mr. Carl Garrison, the Virginia State Forester inviting the Department of Forestry (DOF) to provide comments and identify environmental resources in and around the above named project for a scoping study. The Department of Forestry appreciates the opportunity to work with the Virginia Department of Transportation (VDOT) and take advantage of opportunities to use planning decisions and information in the NEPA process to ensure environmental concerns are addressed. The Department of Forestry is charged with conserving the Commonwealth's forest resources for the use and enjoyment of current and future generations of Virginia citizens and its comments reflect that charge.

It is our understanding from your letter to Mr. Garrison that the purpose of the current study is to develop alternative solutions to address insufficient transportation capacity and correct roadway and bridge deficiencies throughout the project corridor. With that as the context, DOF supports as a build alternative, widening the existing highway corridor rather than creating a new one. Such an action will minimize adverse impacts on the area's natural resources.

DOF notes that while it was prepared for a different but adjacent I-64 study area, some of VDOT's natural resources findings in its 2012 *Interstate 64 Peninsula Study Draft Environmental Impact Statement Natural Resources Technical Memorandum* covering the portions of I-64 from Richmond south to Hampton Roads are applicable as well to the I-64 Widening and High-Rise Bridge Replacement Location study area. That memorandum summarized the natural resources found in the Coastal Plain physiographic province as follows: "[a] variety of upland forest communities and diverse tidal and freshwater wetlands and stream systems....The upland forests that originally covered much of the Virginia Coastal Plain have been extensively cleared or altered, making it difficult to determine which species and natural

communities were once naturally prevalent. Much of the contemporary forest consists of successional or silvicultural stands of loblolly pine (*Pinus taeda*) and secondary pine-hardwood forests that have developed after repeated timbering or agricultural abandonment. The most mature remnant stands on mesic uplands are typically characterized by associations of American beech (*Fagus grandifolia*), several oaks (*Quercus* spp.), and American holly (*Ilex opaca var. opaca*)...."

The City of Chesapeake's 2026 Comprehensive Plan further characterizes the natural resources in the area as follows: "The City is located in the northern extent of what is known as the Southeastern Evergreen Forest Region (DCR, Natural Heritage, 1998), which stretches from southeastern Virginia along the Gulf Coast to eastern Texas. According to the Natural Heritage Division of the Virginia Department of Conservation and Recreation, this ecosystem is characterized by pine and pine-hardwood communities, along with large areas of swamp land. Examples of typical vegetation found in such areas include Pond Pine, Atlantic White Cedar, Red Maple, Loblolly Pine and Black Needle Rush Marsh" (Forward Chesapeake 2026 Comprehensive Plan, pp. 117-118).

Under the heading "Potential Impacts and Mitigation Measures" and subheading "Build Alternatives" the 2012 VDOT DEIS technical memorandum completed for the other I-64 segments from Richmond to Norfolk also concluded that "[a]ll of the Build Alternatives have the potential to impact terrestrial and aquatic habitat or species along the study area corridor. Extensive coordination with the different agencies should continue throughout all stages of project development to reduce potential impacts to these resources. In addition, avoidance and minimization of potential impacts to the natural environment and wildlife should be considered throughout the design and construction phases of the project. Permitting of the project would also address avoidance, minimization, and compensatory mitigation measures, as needed."

DOF notes that all build alternatives that may be considered for the 64 Widening and High-Rise Bridge Replacement Location Study segment of I-64 will also have the same potential to impact terrestrial and aquatic habitat or species along it's study area corridor and recommends that VDOT adopt the same coordination, design and construction recommendations as stated above for this I-64 segment too.

Aerial photos of the study area for the 64 Widening and High-Rise Bridge Replacement project show it to be urbanized and highly developed. There are however, two significant forested areas DOF recommends be avoided as much as possible in the design of the project. One is located on the border of City of Portsmouth and City of Chesapeake land west of Cavalier Blvd. and stretches to the intersection of I-664, I-264 and I-64. That forested area also borders two lakes (Lake Cavalier and Lake Forest) and provides some recreational benefits. A private canoe launch site is identified there (Forward Chesapeake 2026 Comprehensive Plan, Map 19 Public Waterfront Access, p. 146). The second large forested area is located at the eastern end of the project study area in the vicinity of the High Rise Bridge. That forest also provides recreational benefits and is identified as a city neighborhood park with potential water access (Forward Chesapeake 2026 Comprehensive Plan, Map 20 Potential Water Access Sites, p. 148).

In addition to the identified recreational services, it can also be presumed that both of these forests provide water quality benefits due to their proximity to water bodies. The WIP II guidance offered to localities for addressing TMDL requirements describes forestland as the best land use for meeting water quality objectives. Furthermore, the City of Chesapeake's comprehensive plan cites as a planning strategy incorporating consideration of adjacent or nearby documented natural areas or environmentally sensitive areas into site plan assessments with the objective being to minimize impacts to these areas (Forward Chesapeake 2026 Comprehensive Plan, p. 148).

DOF notes too, that the project's study area is within a Chesapeake Bay preservation area (Forward Chesapeake 2026 Comprehensive Plan, Map 15 Chesapeake Bay Preservation Areas, p. 131) and that most of the land in the study area is classified as upland (Forward Chesapeake 2026 Comprehensive Plan, Map 18 National Wetland Inventory, p. 141). As such, the forests DOF has identified for avoidance mitigation are upland forests. DOF understands that VDOT is exempt from the Chesapeake Bay Preservation Act in this instance, but notes that the exemption is qualified by the road alignment and design being optimized "consistent with all applicable requirements, to prevent or otherwise minimize the encroachment in the RPA and to minimize the adverse effects on water quality" (Chesapeake Bay Preservation Act, Sec. 23-13. Exemptions (a)(1) a. Page 23-17). The location of the two forested areas DOF has identified for avoidance mitigation are therefore also located in a sensitive environmental zone in addition to being important for recreational and water quality management purposes. Section 6001 of SAFETEA-LU requires statewide long-range plans to discuss environmental mitigation opportunities and specifically references upland forests as a land use for which mitigation plans should be developed. FHWA policy guidance endorses an "ecosystem approach" as a framework through which VDOT can meet the Section 6001 requirements.

This concludes our comments. Please advise if you require any additional information or would like to discuss these recommendations.

Greg Evans
Voluntary Mitigation Program Manager
Forestland Conservation Division
Virginia Department of Forestry
900 Natural Resources Drive, Suite 800
Charlottesville, VA 22903
434-220-9020



United States Department of the Interior



FISH AND WILDLIFE SERVICE Ecological Services 6669 Short Lane Gloucester, Virginia 23061

FEB 0 4 2013

Greetings:

Due to increases in workload and refinement of our priorities in Virginia, this office will no longer provide individual responses to requests for environmental reviews. However, we want to ensure that U.S. Fish and Wildlife Service trust resources continue to be conserved. When that is not possible, we want to ensure that impacts to these important natural resources are minimized and appropriate permits are applied for and received. We have developed a website, http://www.fws.gov/northeast/virginiafield/endspecies/Project_Reviews_Introduction.html, that provides the steps and information necessary to allow landowners, applicants, consultants, agency personnel, and any other individual or entity requiring review/approval of their project to complete a review and come to the appropriate conclusion.

The website will be frequently updated to provide new species/trust resource information and methods to review projects, so refer to the website for each project review to ensure that current information is utilized.

If you have any questions about project reviews or need assistance, please contact Troy Andersen of this office at (804) 693-6694, extension 166, or troy_andersen@fws.gov. For problems with the website, please contact Mike Drummond of this office at mike_drummond@fws.gov.

Sincerely,

Cindy Schulz Supervisor

Virginia Field Office

 From:
 Dufore, Ezekiel (VDH)

 To:
 Smizik, Scott (VDOT)

Cc: Matthews, Barry (VDH); Albrecht, Edward (VDH)

Subject: Interstate 64 Widening and High Rise Bridge Replacement Location Study

Date: Friday, August 30, 2013 4:51:25 PM

Project #: 0064-131-783, P101

UPC #: 104366 Location: Chesapeake

VDH – Office of Drinking Water has reviewed the above project. Below are our comments as they relate to proximity to **public drinking water sources** (groundwater wells, springs and surface water intakes). Potential impacts to public water distribution systems or sanitary sewage collection systems must be verified by the local utility.

No groundwater wells are within a 1 mile radius of the project site.

No surface water intakes are located within a 5 mile radius of the project site.

The project is not within Zone 1 (up to 5 miles into the watershed) or Zone 2 (greater than 5 miles into the watershed) of any public surface water sources.

There are no apparent impacts to public drinking water sources due to this project.

Ezekiel Dufore

Office of Drinking Water
Virginia Department of Health
James Madison Building
109 Governor Street
Richmond, VA 23219
(w) 804-864-7201
ezekiel.dufore@vdh.virginia.gov



COMMONWEALTH of VIRGINIA

Marine Resources Commission

Douglas W. Domenech Secretary of Natural Resources 2600 Washington Avenue Third Floor Newport News, Virginia 23607

Jack G. Travelstead Commissioner

October 1, 2013

Mr. Scott Smizik, AICP VDOT Project Manager Virginia Department of Transportation 1401 East Broad Street Richmond, Virginia 23219

RE: Interstate 64 Widening and High-Rise Bridge Replacement Location Study, City of Chesapeake (VDOT Project #0064-131-783, P101; UPC: 104366

Dear Mr. Smizik:

Please be advised that the Commission, pursuant to Section 28.2-1200 et seq of the Code of Virginia, has jurisdiction over any encroachments in, on, or over the beds of the bays, ocean, rivers, streams, or creeks which are the property of the Commonwealth. Accordingly, if any portion of the subject project involves any encroachments channelward of mean low water, a permit may be required from our agency. Additionally, VMRC currently acts as the Wetlands Board in the City of Chesapeake, therefore, a permit may also be required for impacts to tidal wetlands. Any jurisdictional impacts will be reviewed by VMRC during the Joint Permit Application process. Thank you for the opportunity to comment.

Regards.

Justine R. Woodward Environmental Engineer

gentine & Bodward

JRW/jaj

cc: DEQ Office of Environmental Impact Review



Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 11/12/2013 Applicant/Owner: VDOT State: VA Sampling Point: WL-1 Investigator(s): Glenn Wilson and Catherine Harold Section, Township, Range: Landform (hillslope, terrace, etc.): Interstate interchange 0-0.5% Local relief (concave, convex, none): concave Slope (%): 36° 47' 12.51" Long: 76° 24' 10.51" Subregion (LRR or MLRA): LRR T Lat: Datum: **WGS 84** Soil Map Unit Name: Urban land-Conetoe-Chesapeake-Tetotum complex E2EM1P NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) Soil ,or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes naturally problematic? (If needed, explain any answers in Remarks.) or Hydrology SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Wetland Hydrology Present? Yes Within a Wetland? No Yes Remarks: PEM5 Wetland (Phragmites australis dominant) Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) Wetland is located in the median of I-64 without a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Yes Depth (inches): 6" Wetland Hydrology Present? Saturation Present? Depth (inches): X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Wetland is well defined depressional PEM with Phragmites almost exclusively

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	_
		9	- · ,	Sampling date: 11/12/2013
Vegetation (Four Strata) - Us	sa scientific names of	nlante		Sampling point: WL-1
vegetation (i our otrata) - os	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)		Species?	Status	Number of Dominant species
1.				That are OBL, FACW, or FAC: 2 (A)
2	<u> </u>			Total number of Dominant
				Species across All Strata: 2 (B)
3.				Percent of Dominant Species
4.	<u> </u>			That are OBL, FACW, or FAC: 100% (A/B)
				111dt die GBE, 17tovv, 6117te
Total Cover: 0	50% of total cover	0%		
	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1				OBL species x 1 =
	<u> </u>			FACW species x 2 =
2		-		FAC species x 3 = x 4 =
3.	_			UPL species
J				Column Totals: (A) (B)
4.				Prevalence Index = B/A =
	_			
5	<u> </u>			
Total Cover: 0	FOO/ of total action	00/		Hydrophytic Vegetation Indicators:
Total Cover: 0	50% of total cover 20% of total cover	0% 0%		1 - Rapid Test for Hydrophytic Vegetation x 2 - Dominance Test is >50%
Herb Stratum ()	20% of total cover	076		3 - Prevalence Index is ≤3.0 ¹
Phragmites australis	100	Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Common Reed	100		17.011	and Remarks or on a separate sheet)
2.				Problematic Hydrophytic Vegetation ¹ (Explain)
3.				
	<u> </u>			
4.	<u> </u>			¹Indicators of hydric soil and wetland hydrology must
5.				be present Definitions of Four Vegetation Strata:
o				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.				diameter at breast height (DBH), regardless of height.
	<u> </u>			
Total Cover: 100	50% of total cover	50%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	20%		3in. DBH and greater than 3.28 ft (1m) tall.
Wo <u>ody Vine Stratum ()</u> 1. <i>Smilax rotundifolia</i>		Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
Horsebrier		<u></u>	FAC	and woody plants less than 3.28 ft tall.
2.				and woody planto loss than 0.20 it tall.
				Woody Vine - All woody vines greater than 3.28 ft in height.
3.	<u> </u>			
4				Hydrophytic
Total Cover: 5	50% of total cover	3%		Vegetation Present? Yes X No
rotal Gover.	20% of total cover	1%		100 K. 103 X. 100
Remarks: (Include photo num				11 1 (5 (5 15)
Wetland margins contain Smil	lax rotundifolia	- 1	\ r.	Herb (5-ft radius)
and <i>Arundinaria gigantea</i>		Trees and		
		(30-ft rac	ilus)	
		Sapling/Shr	uh _	
		(15-ft radiu		
		123 11 14414		

Project/Site	L64 /High Ric	se Bridge Corridor St	tudy
riojeci/Site.	1-04 / MIGH KIS	se bilage Collian Si	luuy

Sampling date: 11/12/2013
Sampling point: WL-1

SO.	
JUI	

Soil								
Profile Des	scription: (Describe to the	depth need	ed to document th	ne indicator	or confirm th	e absence o	f indicators.)	
Depth	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-2	10YR 3/3	100					loam	saturated
2-9	10YR 5/1	100					fine sandy loam	saturated
9-16	10YR 4/1	100					fine sandy loam	
0 10	1011(1)1	100					inio danay loani	
	· 							-
47 0 0					 			
	Concentration, D=Depletion,				ains.		² Location: PL=Pore	
-	I Indicators: (Applicable t	o all LRRS,		•	(00) (100		for Problematic Hydri	
_	sol (A1)				e (S8) (LRR \$	_	_ 1cm Muck (A9) (LF	·
	Epipedon (A2)				(LRR S, T, U)	_	_ 2cm Muck (A10) (L	
Black	Histic (A3)		Loamy Muc	ky Mineral (F	1) (LRR O)	_	Reduced Vertic (F1	8) (outside MLRA 150A,B)
Hydro	gen Sulfide (A4)		Loamy Gley	ed Matrix (F2	2)	_	Piedmont Floodplai	in Soils (F19) (LRR P, S, T)
Statific	ed Layers (A5)		X Depleted M	atrix (F3)		_	Anomalous Bright L	Loamy Soils (F20)
Organ	nic Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6))		(MLRA 153B)	
5 cm I	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface (F7)	_	Red Parent Materia	al (TF2)
Muck	Presence (A8) (LRR U)		Redox Dep	ressions (F8)		_	Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm N	Muck (A9) (LRR P, T)		Marl (F10) ((LRR U)		_	Other (Explain in R	emarks)
Deple	ted Below Dark Surface (A	11)	Depleted O	chric (F11) (MLRA 151)			
Thick	Dark Surface (A12)		Iron-Manga	nese Masses	(F12) (LRR	O, P, T)	3Indicators of hydro	phytic vegetation and
Coast	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present,					
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochric (F17) (MLRA 151) unless disturbed or problematic					
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18) (N	MLRA 150A, 1	150B)		
Sandy	Redox (S5)		Piedmont F	Toodplain Soi	ils (F19) (ML I	RA 149A)		
_	ed Matrix (S6)				. , .	•	, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)			, , ,	•		
	Layer (if observed):	-,						
Type:								
туро.								
Denth ((inches):					Hydric Soils	s Present? VE	ES X No
_ Бери ((IIIOIIes).					riyunc oon	STIESCHE: II	<u> </u>
Remarks:	Daday faaturaa wara diffi	in the same	Coil was seturated					
rtomants.	Redox features were diffi	icuit to see.	Soil was saturated					

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/6/2014 Applicant/Owner: VDOT State: VA Sampling Point: WL-2 Investigator(s): David Kwasniewski and Glenn Wilson Section, Township, Range: 0-1% Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 36° 47′ 09.12″ Long: 76° 24' 09.01" Subregion (LRR or MLRA): LRR T Lat: Datum: **WGS 84** Soil Map Unit Name: Conetoe-Chesapeake-Tetotum complex N/A NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation naturally problematic? (If needed, explain any answers in Remarks.) or Hydrology SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Is the Sampled Area Wetland Hydrology Present? Yes Within a Wetland? No Yes Remarks: PFO Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) Wetland is located south of I-64 without a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Χ Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Χ Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): Water Table Present? 0" Depth (inches): Wetland Hydrology Present? Saturation Present? Depth (inches): Χ No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Data recorded in February, with over 0.5" of precip in the previous week.

Project/Site:	I-64 /I	High Rise Brid	ge Corridor St	tudy	
•				•	Sampling date: 2/6/2014
					Sampling point: WL-2
Vegetation (Four Strata) - Use sci	ientific names	s of plants.		
		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes	: ft)	% Cover	Species?	Status	Number of Dominant species
1. Acer rubrum		50	<u> </u>	FAC	That are OBL, FACW, or FAC:3(A)
Red maple					
2					Total number of Dominant
					Species across All Strata:3(B)
3					
					Percent of Dominant Species
4.					That are OBL, FACW, or FAC: 100% (A/B)
Total Cover: 50	50% (of total cover	25%		
	20% (of total cover	10%		Prevalence Index worksheet:
Sapling /Shrub Stratum	(ft)				Total % Cover of Multiply by:
Morella cerifera	<u> </u>	40	Y	FAC	OBL species FALSE x 1 = 0
wax myrtle					FACW species FALSE x 2 = 0
2. Pinus taeda		15	Y	FAC	FAC species FALSE x 3 = 0
loblolly pine					FACU species FALSE x 4 = 0
3. Liquidambar styracif	lua	10	N	FAC	UPL species FALSE x 5 = 0
sweet gum					Column Totals: 0 (A) 0 (B)
4. Acer rubrum		10	N	FAC	Prevalence Index = B/A = 0
red maple					
5					•
					Hydrophytic Vegetation Indicators:
Total Cover: 75	50% d	of total cover	38%		1 - Rapid Test for Hydrophytic Vegetation
. 3.0 33		of total cover	15%		X 2 - Dominance Test is >50%
Herb Stratum ()	2070	31 total 00 vo.	1070		3 - Prevalence Index is ≤3.0 ¹
1.					4 - Morphological Adaptations¹ (Provide supporting data
Netted chain fern					and Remarks or on a separate sheet)
2.					Problematic Hydrophytic Vegetation ¹ (Explain)
Lizard's tail					Problematic Hydrophytic Vegetation (Explain)
3.					
Posion ivy 4. Smilax rotundifolia					. Indicators of budgio call and watland budgelong much
4. Smilax rotundifolia					¹Indicators of hydric soil and wetland hydrology must
					be present
5					Definitions of Four Vegetation Strata:
					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6					diameter at breast height (DBH), regardless of height.
TatalOassa					One line (Ohersha Marsharlanta and alice in the same
Total Cover: 0		of total cover	0%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% (of total cover	0%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()					
1					Herb - All herbaceous (non-woody) plants, regardless of size,
					and woody plants less than 3.28 ft tall.
2					
					Woody Vine - All woody vines greater than 3.28 ft in height.
3					
4					Hydrophytic
					Vegetation
Total Cover: 0	50% (of total cover	0%		Present? Yes X No
	20% (of total cover	0%		
Remarks: (Include photo	numbers	here or on a so	eparate sheet	.)	Howle /E ft wooding)
			_ ,	\	Herb (5-ft radius)
			Trees and		
			(30-ft rad	dius)	
			Sapling/Shr	ub	
			(15-ft radiu		
		L	,	,	

Drojoot/Cito:	LG4 /Lligh	Dico Dridge	Carridar Study
Project/Site:	1-64 /HIGh	Rise Bridge	Corridor Study

Sampling date: 2/6/2014
Sampling point: WL-2

Depth	Matrix			Redox F	eatures						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	_	Remarks		
0-3	10YR 4/2	100					fine sandy loam	_	wet		
3-6	10YR 6/2	80	10YR 5/6	20			loamy sand	_	wet		
6-10	10YR 6/1	80	10YR 5/6	20			sandy clay	_	wet		
10-16+	Gley 2 6/5B	60	10YR 6/6	40			sandy clay	_	wet		
								-			
¹Type: C=C	Concentration, D=Depletion	on, RM=Reduc	ed Matrix, MS=Ma	asked Sand	Grains.		² Location: PL=F	ore Lin	ing, M=Matrix.		
Hydric Soi	I Indicators: (Applicabl	e to all LRRs,	unless otherwis	e noted.)		Indicators	s for Problematic H	ydric S	oils³:		
Histos	sol (A1)		Polyvalue	Below Surfa	ice (S8) (LRR	S, T, U)	1cm Muck (A9)	(LRR	0)		
Histic	Epipedon (A2)		Thin Dark	Surface (S9) (LRR S, T, l	J) _	2cm Muck (A10) (LRR	! S)		
Black	Histic (A3)		Loamy M	ucky Mineral	(F1) (LRR O)	_	Reduced Vertic (F18) (outside MLRA 150A,B)				
X Hydro	gen Sulfide (A4)		Loamy GI	leyed Matrix	(F2)	_	Piedmont Flood	lplain S	oils (F19) (LRR P, S, T)		
Statifi	ed Layers (A5)		X Depleted	Matrix (F3)		_	Anomalous Brig	ght Loar	my Soils (F20)		
Organ	nic Bodies (A6) (LRR P,	T, U)	Redox Da	ark Surface(F	6)		(MLRA 153B)				
5 cm l	Mucky Mineral (A7) (LRF	R P, T, U)	Depleted	Dark Surface	e (F7)	-	Red Parent Mat	terial (T	F2)		
Muck	Presence (A8) (LRR U)		Redox De	epressions (F	8)	_	Very Shallow D	ark Surl	face (TF12) (LRR T, U)		
1cm N	Muck (A9) (LRR P, T)		Marl (F10) (LRR U)		_	Other (Explain i	n Rema	arks)		
Deple	ted Below Dark Surface	(A11)	Depleted	Ochric (F11)	(MLRA 151)	_					
Thick	Dark Surface (A12)		Iron-Mang	ganese Mass	es (F12) (LRR	O, P, T)	3Indicators of hy	/drophy	tic vegetation and		
Coast	al Prairie Redox (A16) (I	MLRA 150A)	Umbric S	urface (F13)	(LRR P, T, U)		wetland hydrolo	gy mus	t be present,		
Sandy Mucky Mineral (S1) (LRR, O, S) Delta Ochric (F17)											
Sandy	/ Mucky Mineral (51) (LF	RR, O, S)	Delta Och	nric (F17) (M	LRA 151)		unless disturbed	d or pro	blematic		
	/ Mucky Mineral (S1) (LF / Gleyed Matrix (S4)	RR, O, S)			LRA 151) (MLRA 150A,	150B)	unless disturbed	d or pro	blematic		
Sandy	Gleyed Matrix (S4)	RR, O, S)	Reduced	Vertic (F18)	(MLRA 150A,	-	unless disturbed	d or pro	blematic		
Sandy Sandy	/ Gleyed Matrix (S4) / Redox (S5)	RR, O, S)	Reduced Piedmont	Vertic (F18) Floodplain S	(MLRA 150A, Soils (F19) (MI	LRA 149A)		d or pro	blematic		
Sandy Sandy Stripp	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6)		Reduced Piedmont	Vertic (F18) Floodplain S	(MLRA 150A, Soils (F19) (MI	LRA 149A)	unless disturbed A, 153C, 153D)	d or pro	blematic		
Sandy Sandy Stripp Dark S	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S,		Reduced Piedmont	Vertic (F18) Floodplain S	(MLRA 150A, Soils (F19) (MI	LRA 149A)		d or pro	blematic		
Sandy Sandy Stripp Dark S	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6)		Reduced Piedmont	Vertic (F18) Floodplain S	(MLRA 150A, Soils (F19) (MI	LRA 149A)		d or pro	blematic		
Sandy Sandy Stripp Dark S	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S,		Reduced Piedmont	Vertic (F18) Floodplain S	(MLRA 150A, Soils (F19) (MI	LRA 149A)		d or pro	blematic		
Sandy Sandy Stripp Dark S Restrictive Type:	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S,		Reduced Piedmont	Vertic (F18) Floodplain S	(MLRA 150A, Soils (F19) (MI	LRA 149A) (MLRA 149	A, 153C, 153D)				
Sandy Sandy Stripp Dark S Restrictive Type:	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S,		Reduced Piedmont	Vertic (F18) Floodplain S	(MLRA 150A, Soils (F19) (MI	LRA 149A) (MLRA 149		d or pro			
Sandy Sandy Stripp Dark S Restrictive Type:	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S,	T, U)	Reduced Piedmont	Vertic (F18) Floodplain S	(MLRA 150A, Soils (F19) (MI	LRA 149A) (MLRA 149	A, 153C, 153D)				
Sandy Sandy Stripp Dark S Restrictive Type: Depth (/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, e Layer (if observed):	T, U)	Reduced Piedmont Anomalou	Vertic (F18) Floodplain S	(MLRA 150A, Soils (F19) (MI	LRA 149A) (MLRA 149	A, 153C, 153D)				
Sandy Sandy Stripp Dark S Restrictive Type: Depth (/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, e Layer (if observed): (inches):	T, U)	Reduced Piedmont Anomalou	Vertic (F18) Floodplain S us Bright Loa	(MLRA 150A, Soils (F19) (MI	LRA 149A) (MLRA 149	A, 153C, 153D)				
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a Second	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, e Layer (if observed): (inches): sulfidic odors observed d profile was taken of	T, U)	Reduced Piedmont Anomalou	Vertic (F18) i Floodplain S us Bright Loa	(MLRA 150A, Soils (F19) (MI	LRA 149A) (MLRA 149	A, 153C, 153D)				
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth	y Gleyed Matrix (S4) y Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, e Layer (if observed): (inches): sulfidic odors observed b profile was taken of Matrix	T, U) d in upper 12" on 4/21/201	Reduced Piedmont Anomalou Anomalou Redox Feat	Vertic (F18) i Floodplain S us Bright Loa	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	A, 153C, 153D) ils Present?		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches)	y Gleyed Matrix (S4) y Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, e Layer (if observed): (inches): sulfidic odors observed d profile was taken of Matrix Color (moist)	T, U) d in upper 12" on 4/21/201	Reduced Piedmont Anomalou Anomalou Redox Feat	Vertic (F18) i Floodplain S us Bright Loa	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	A, 153C, 153D) ils Present? Texture		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2	y Gleyed Matrix (S4) y Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, e Layer (if observed): (inches): sulfidic odors observed d profile was taken of Matrix Color (moist) 10YR 3/1	T, U) d in upper 12" on 4/21/2014 % 100	Reduced Piedmont Anomalor Anomalor Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	A, 153C, 153D) ils Present? Texture loam		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2 2-4 4-7	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, Layer (if observed): (inches): sulfidic odors observed f profile was taken of Matrix Color (moist) 10YR 3/1 10YR 5/1 10YR 5/1	T, U) d in upper 12" on 4/21/201 % 100 96-97 80-85	Reduced Piedmont Anomalou Anomalou Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa tures t) % 3-4	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	ils Present? Texture loam silt loam sandy loam		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2 2-4	y Gleyed Matrix (S4) y Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, e Layer (if observed): ginches): sulfidic odors observed b profile was taken of Matrix Color (moist) 10YR 3/1 10YR 5/1	T, U) d in upper 12" on 4/21/2014 % 100 96-97	Reduced Piedmont Anomalou Anomalou Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa tures t) % 3-4	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	A, 153C, 153D) ils Present? Texture loam silt loam		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2 2-4 4-7	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, Layer (if observed): (inches): sulfidic odors observed f profile was taken of Matrix Color (moist) 10YR 3/1 10YR 5/1 10YR 5/1	T, U) d in upper 12" on 4/21/201 % 100 96-97 80-85	Reduced Piedmont Anomalou Anomalou Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa tures t) % 3-4	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	ils Present? Texture loam silt loam sandy loam		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2 2-4 4-7	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, Layer (if observed): (inches): sulfidic odors observed f profile was taken of Matrix Color (moist) 10YR 3/1 10YR 5/1 10YR 5/1	T, U) d in upper 12" on 4/21/201 % 100 96-97 80-85	Reduced Piedmont Anomalou Anomalou Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa tures t) % 3-4	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	ils Present? Texture loam silt loam sandy loam		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2 2-4 4-7	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, Layer (if observed): (inches): sulfidic odors observed f profile was taken of Matrix Color (moist) 10YR 3/1 10YR 5/1 10YR 5/1	T, U) d in upper 12" on 4/21/201 % 100 96-97 80-85	Reduced Piedmont Anomalou Anomalou Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa tures t) % 3-4	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	ils Present? Texture loam silt loam sandy loam		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2 2-4 4-7	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, Layer (if observed): (inches): sulfidic odors observed f profile was taken of Matrix Color (moist) 10YR 3/1 10YR 5/1 10YR 5/1	T, U) d in upper 12" on 4/21/201 % 100 96-97 80-85	Reduced Piedmont Anomalou Anomalou Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa tures t) % 3-4	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	ils Present? Texture loam silt loam sandy loam		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2 2-4 4-7	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, Layer (if observed): (inches): sulfidic odors observed f profile was taken of Matrix Color (moist) 10YR 3/1 10YR 5/1 10YR 5/1	T, U) d in upper 12" on 4/21/201 % 100 96-97 80-85	Reduced Piedmont Anomalou Anomalou Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa tures t) % 3-4	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	ils Present? Texture loam silt loam sandy loam		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2 2-4 4-7	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, Layer (if observed): (inches): sulfidic odors observed f profile was taken of Matrix Color (moist) 10YR 3/1 10YR 5/1 10YR 5/1	T, U) d in upper 12" on 4/21/201 % 100 96-97 80-85	Reduced Piedmont Anomalou Anomalou Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa tures t) % 3-4	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	ils Present? Texture loam silt loam sandy loam		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2 2-4 4-7	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, Layer (if observed): (inches): sulfidic odors observed f profile was taken of Matrix Color (moist) 10YR 3/1 10YR 5/1 10YR 5/1	T, U) d in upper 12" on 4/21/201 % 100 96-97 80-85	Reduced Piedmont Anomalou Anomalou Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa tures t) % 3-4	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	ils Present? Texture loam silt loam sandy loam		<u>X</u> No		
Sandy Sandy Stripp Dark S Restrictive Type: Depth (Remarks: a second Depth (inches) 0-2 2-4 4-7	/ Gleyed Matrix (S4) / Redox (S5) ed Matrix (S6) Surface (S7) (LRR P, S, Layer (if observed): (inches): sulfidic odors observed f profile was taken of Matrix Color (moist) 10YR 3/1 10YR 5/1 10YR 5/1	T, U) d in upper 12" on 4/21/201 % 100 96-97 80-85	Reduced Piedmont Anomalou Anomalou Redox Feat Color (mois	Vertic (F18) I Floodplain S us Bright Loa tures t) % 3-4	(MLRA 150A, Goils (F19) (MI my Soils (F20)	LRA 149A) (MLRA 149 Hydric So	ils Present? Texture loam silt loam sandy loam		<u>X</u> No		

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 11/13/2013 Applicant/Owner: VDOT State: VA Sampling Point: WL-3 Investigator(s): Glenn Wilson and Catherine Harold Section, Township, Range: 0-1% Landform (hillslope, terrace, etc.): drainage in median Local relief (concave, convex, none): none Slope (%): 36° 47′ 11.74″ Long: 76° 24' 04.06" Subregion (LRR or MLRA): LRR T Lat: Datum: **WGS 84** PFO1B Soil Map Unit Name: Urban land-Conetoe-Chesapeake-Tetotum complex NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) ,Soil or Hydrology, significantly disturbed? Are "Normal Circumstances" present? Yes naturally problematic? (If needed, explain any answers in Remarks.) or Hydrology SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Is the Sampled Area Yes Wetland Hydrology Present? Yes Within a Wetland? No Yes Remarks: PEM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) Wetland is located south of I-64 without a tidal influence Area receive runoff from surrounding interstate pavement. **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: 8-10" Surface Water Present? Depth (inches): Water Table Present? 0" Depth (inches): Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hummocks, water stained leaves, sharply defined wetland by highway slopes

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
			•	Sampling date:11/13/2013
Vegetation (Four Strata) - Use	soiontifia namas of	nlants		Sampling point: WL-3
vegetation (Four Strata) - Ose	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.				That are OBL, FACW, or FAC: 2 (A)
			-	
2.				Total number of Dominant
				Species across All Strata: 2 (B)
3.	_			
				Percent of Dominant Species
4.			-	That are OBL, FACW, or FAC: 100% (A/B)
				(, , , , , , , , , , , , , , , , ,
Total Cover: 0	50% of total cover	0%	-	
	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1. Acer rubrum	5	Y	FAC	OBL species x 1 =
Red Maple				FACW species x 2 =
2.	_		-	FAC species x 3 =
<u> </u>	_			FACU species x 4 =
3.				UPL species x 5 =
·	_			Column Totals: (A) (B)
4.				Prevalence Index = B/A =
	_			Trevalence mack = B// =
5	_			
	_		·	Hydrophytic Vegetation Indicators:
Total Cover: 5	50% of total cover	3%		1 - Rapid Test for Hydrophytic Vegetation
rotal Cover.	20% of total cover	1%		× 2 - Dominance Test is >50%
Herb Stratum ()	2070 01 10101 00701	1 70		3 - Prevalence Index is ≤3.0 ¹
1. Phragmites australis		Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Common Reed			FACVV	and Remarks or on a separate sheet)
			OBL	·
		IN	UBL	Problematic Hydrophytic Vegetation¹ (Explain)
Cottongrass Bulrush				
3. <u>Leersia oryzoides</u>	10	N	OBL	
Rice Cut Grass				the disease of booking and continued booking a continued
4. Arundinaria gigantea	5	N	FACW	Indicators of hydric soil and wetland hydrology must
Giant Cane				be present Definitions of Four Vegetation Strata:
5				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
				diameter at breast height (DBH), regardless of height.
6				diameter at breast neight (DBH), regardless of neight.
Total Cavaria FF	FOO/ of total cover	200/		Capling /Chrub Woody plants evaluding vines loss than
Total Cover: 55	50% of total cover 20% of total cover	28%		Sapling /Shrub - Woody plants, excluding vines, less than
Mandy Vina Chrotyma ()	20% of total cover	11%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				Heat. All back account (account of alcosts account of alcosts.
1	_			Herb - All herbaceous (non-woody) plants, regardless of size,
			-	and woody plants less than 3.28 ft tall.
2				West Mes All I in the Cooker Line
	_			Woody Vine - All woody vines greater than 3.28 ft in height.
3				
, 				
4				Hydrophytic
T-t-I O	500/ - f t-t-l	00/		Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
Dana alian (ka aki da la kata la mak	20% of total cover	0%		
Remarks: (Include photo numb	ers nere or on a sepa	rate sneet.)		Herb (5-ft radius)
decay logs		Trees and	Vines	
		(30-ft rac		
		(50-11140	alus)	
	1			T1 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
		Sapling/Shr		
		(15-ft radiu	ıs)	
	l			

Project/Site:	I-64 /High Ri	e Bridge	Corridor Study	

Sampling date: 11/13/2013
Sampling point: WL-3

SO.	
JUI	

Soil								
Profile Des	cription: (Describe to the	depth need	ed to document tl	ne indicator	or confirm th	e absence o	f indicators.)	
Depth	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-10	10YR 2/1	100					fine sandy loam	saturated
10-20	10YR 6/1	100					fine sand	saturated
10 20	10111 0/1						o dana	<u> </u>
								-
								-
	-							
	-							
1T 0 0					 		31 (' DI D	
	oncentration, D=Depletion,		•		ains.		² Location: PL=Pore	<u> </u>
_	Indicators: (Applicable to	o all LRRs, i		•			for Problematic Hydri	
Histos	` '				e (S8) (LRR S		1cm Muck (A9) (LF	•
Histic I	Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U)	_	2cm Muck (A10) (L	RR S)
Black	Histic (A3)		Loamy Muc	ky Mineral (F	1) (LRR O)	_	Reduced Vertic (F1	8) (outside MLRA 150A,B)
X Hydrog	gen Sulfide (A4)		Loamy Gley	ed Matrix (F	2)	_	Piedmont Floodplai	n Soils (F19) (LRR P, S, T)
Statifie	ed Layers (A5)		X Depleted M	atrix (F3)		_	Anomalous Bright L	oamy Soils (F20)
Organ	ic Bodies (A6) (LRR P, T, U	U)	Redox Dark	Surface(F6))		(MLRA 153B)	
5 cm N	Mucky Mineral (A7) (LRR P	P, T, U)	Depleted D	ark Surface (F7)		Red Parent Materia	l (TF2)
Muck I	Presence (A8) (LRR U)		Redox Dep	ressions (F8))		Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm M	luck (A9) (LRR P, T)		Marl (F10) ((LRR U)		_	Other (Explain in Re	emarks)
Deplet	ed Below Dark Surface (A1	1)	Depleted O	chric (F11) (MLRA 151)		<u> </u>	
Thick I	Dark Surface (A12)		Iron-Manga	nese Masses	s (F12) (LRR (), P, T)	3Indicators of hydro	ohytic vegetation and
Coasta	al Prairie Redox (A16) (ML	RA 150A)	Umbric Sur	face (F13) (I	RR P, T, U)		wetland hydrology n	nust be present,
Sandy	Mucky Mineral (S1) (LRR,	O, S)	Delta Ochri	c (F17) (ML I	RA 151)		unless disturbed or	problematic
_	Gleyed Matrix (S4)	, ,			MLRA 150A, 1	50B)		•
_	Redox (S5)				ils (F19) (MLI	•		
	ed Matrix (S6)			•	, , ,	•	, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)	_	5	, (-,	•	,, ,	
	Layer (if observed):	-,						
Type:								
турс.								
Depth (i	inches).					Hydric Soil	s Present? VF	S X No
Deptii (i	iliones).					riyunc oon	STIESCHE: IL	<u> </u>
Remarks:								
ixemans.								
1								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 11/12/2013 Applicant/Owner: VDOT State: VA Sampling Point: WL-4 Investigator(s): Glenn Wilson and Catherine Harold Section, Township, Range: 0-2% Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 36° 47' 06.34" Long: <u>76°</u> 24' 01.17" Subregion (LRR or MLRA): LRR T Lat: Datum: **WGS 84** PFO4R Soil Map Unit Name: Nawney Silt Ioam NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Wetland Hydrology Present? Yes No Within a Wetland? Yes Remarks: PFO Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) Wetland is located south of I-64 without a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Surface Water (A1) Aquatic Fauna (B13) High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Dry-Season Water Table (C2) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Yes Depth (inches): Wetland Hydrology Present? Saturation Present? Depth (inches): X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
·	•		•	Sampling date:11/12/2013
				Sampling point: WL-4
Vegetation (Four Strata) - U	se scientific names of	plants.		
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)		Species?	Status	Number of Dominant species
1. Acer rubrum	30	Y	FAC	That are OBL, FACW, or FAC:5(A)
Red Maple				
2. <u>Liquidambar styraciflua</u>	30	Y	FAC	Total number of Dominant
Sweet-Gum				Species across All Strata: 6 (B)
3. Nyssa sylvatica	10	N	FAC	
Black Tupelo				Percent of Dominant Species
4.				That are OBL, FACW, or FAC: 83% (A/B)
Total Cover: 70	50% of total cover	35%		
	20% of total cover	14%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1. Acer rubrum			FAC	OBL species x 1 =
Red Maple				FACW species x 2 =
2.				FAC species x 3 =
				FACU species x 4 =
3.				UPL species x 5 =
			-	Column Totals: (A) (B)
4.	_			Prevalence Index = B/A =
5.				
·		· 		Hydrophytic Vegetation Indicators:
Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()	2070 01 10101 00701	070		3 - Prevalence Index is ≤3.0 ¹
Saururus cernuus			OBL	4 - Morphological Adaptations¹ (Provide supporting data
Lizard's-Tail			OBL	and Remarks or on a separate sheet)
Woodwardia areolata			OBL	Problematic Hydrophytic Vegetation¹ (Explain)
		<u> </u>	UBL	Problematic Hydrophytic Vegetation (Explain)
Netted Chain Fern	<u> </u>			
3.				
				the disease of headers will and continued headers as well as
4				¹Indicators of hydric soil and wetland hydrology must
_				be present
5				Definitions of Four Vegetation Strata:
				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
Total Cover: 10	50% of total cover	5%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	2%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
Smilax rotundifolia	5	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
Horsebrier				and woody plants less than 3.28 ft tall.
2. Lonicera japanica	5	Y	FACU	
Limber Honeysuckle				Woody Vine - All woody vines greater than 3.28 ft in height.
3				
-				
4				Hydrophytic
		. <u></u>		Vegetation
Total Cover: 10	50% of total cover	5%		Present? Yes X No
	20% of total cover	2%		
Remarks: (Include photo num	nbers here or on a sepa	rate sheet.)		Herb (5-ft radius)
		Troop and	Vines	Tierb (3-it faulus)
		Trees and		— / _ /
		(30-ft rad	aius)	
	1			
		Sapling/Shr	ub	
		(15-ft radiu		
		,	•	

Project/Site:	I-64 /High Rise B	ridge Corridor S	Study	

Sampling date: 11/12/2013
Sampling point: WL-4

Soil										
Profile Des	scription: (Describe to the	e depth need	ed to document t	he indicator	or confirm th	e absence o	f indicators.)			
Depth	Matrix	-		Redox Fea			•			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks		
0-2	10YR 2/1	100			71 -		loam	saturated		
2-13+	10YR 4/1	100					clay loam	saturated		
2 101	1011(1// 1	100					olay loani	dataratod		
								-		
	· -									
	-									
	-									
1T 0 0					 		21 DI D			
	Concentration, D=Depletion		•		ains.			ore Lining, M=Matrix.		
-	I Indicators: (Applicable	to all LRRs,		•			for Problematic Hy			
_	sol (A1)			Polyvalue Below Surface (S8) (LRR S, T, U)				1cm Muck (A9) (LRR O)		
	Epipedon (A2)		Thin Dark Surface (S9) (LRR S, T, U)			_	2cm Muck (A10) (LRR S)			
Black	Histic (A3)		Loamy Mud	cky Mineral (F	1) (LRR O)	_	Reduced Vertic (F18) (outside MLRA 150A,B)		
Hydro	gen Sulfide (A4)		Loamy Gle	yed Matrix (F2	2)	_	Piedmont Floodplain Soils (F19) (LRR P, S, T)			
Statific	ed Layers (A5)		X Depleted M	latrix (F3)		_	Anomalous Bright Loamy Soils (F20)			
Organ	nic Bodies (A6) (LRR P, T,	, U)	Redox Dar	k Surface(F6)			(MLRA 153B)			
5 cm l	Mucky Mineral (A7) (LRR	P, T, U)	Depleted D	ark Surface (F7)	_	Red Parent Mate	rial (TF2)		
Muck	Presence (A8) (LRR U)		Redox Dep	ressions (F8)		_	Very Shallow Da	rk Surface (TF12) (LRR T, U)		
1cm N	Muck (A9) (LRR P, T)		Marl (F10)	(LRR U)		_	Other (Explain in	Remarks)		
X Deple	ted Below Dark Surface (A	\11)	Depleted C	ochric (F11) (I	MLRA 151)					
Thick	Dark Surface (A12)		Iron-Manganese Masses (F12) (LRR O, P, T)				³ Indicators of hydrophytic vegetation and			
Coast	al Prairie Redox (A16) (M	Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present,								
Sandy	Mucky Mineral (S1) (LRF	R, O, S)	Delta Ochr	ic (F17) (MLF	RA 151)		unless disturbed	or problematic		
Sandy	Gleyed Matrix (S4)	•	Reduced V	ertic (F18) (N	ILRA 150A, 1	50B)				
	Redox (S5)		Piedmont F	loodplain Soi	ls (F19) (MLF	RA 149A)				
Stripp	ed Matrix (S6)		Anomalous	Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)						
_	Surface (S7) (LRR P, S, T	. U)			, ,	•				
	Layer (if observed):	, -,								
Type:										
<u>. , , p o . </u>										
Denth ((inches):				Hydric Soils Present? YES X No					
Ворит	(1101103).					riyane oon	3 i resenti	<u> </u>		
Remarks:	Hummocks, multipule tr	unka huttraa	and trans by partra	fied lenticles	atained leave	wotland dr	ainaga pattarna (ama	III ahannala/natworka)		
- torriaritor	Hummocks, manipale ti	ulika, bulliesa	sed trees, hypertro	neu ienticies,	stairieu leaves	s, welland un	ainage patterns (sina	iii Charifeis/Hetworks)		
<u> </u>										

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/6/2014 Applicant/Owner: VDOT Sampling Point: WL-4A State: VA Investigator(s): David Kwasniewski and Glenn Wilson Section, Township, Range: 0-1% Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): WGS 84 36° 47′ 09.63″ Long: 76° 24' 06.13" Subregion (LRR or MLRA): LRR T Lat: Datum: Soil Map Unit Name: Conetoe-Chesapeake-Tetotum complex; Nawney silt loam N/A NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation naturally problematic? (If needed, explain any answers in Remarks.) or Hydrology SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Is the Sampled Area Wetland Hydrology Present? Yes No Within a Wetland? Yes Remarks: PEM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) Wetland is located south of I-64 without a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Yes Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? Χ No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Data recorded in February, with over 0.5" of precip in the previous week.

Project/Site:	I-64	/High Rise Brid	ge Corridor S	tudy	
•					Sampling date: <u>2/6/2014</u>
					Sampling point: WL-4A
Vegetation (Four Strata) - Use s				<u></u>
T 0: : (D) : !	***	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes	: ft)	% Cover	Species?	Status	Number of Dominant species
1					That are OBL, FACW, or FAC: 3 (A)
2.					Total number of Dominant
۷.			· 		
3.					Species across All Strata: 3 (B)
J					Percent of Dominant Species
4.					That are OBL, FACW, or FAC: 100% (A/B)
					111dt die GB2, 171G11, 61171G. <u>110078</u> (74B)
Total Cover: 0	50%	of total cover	0%		
		of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum	(ft)				Total % Cover of Multiply by:
Morella cerifera		10	Y	FAC	OBL species x 1 =
wax myrtle					FACW species x 2 =
2			. <u>.</u>		FAC species x 3 =
		_	. <u></u>		FACU species x 4 =
3.					UPL species x 5 =
					Column Totals:(A)(B)
4					Prevalence Index = B/A =
5					Hydrophytic Vegetation Indicators:
Total Cover: 10	50%	of total cover	5%		1 - Rapid Test for Hydrophytic Vegetation
Total Cover. 10		of total cover	2%		x 2 - Dominance Test is >50%
Herb Stratum ()	2070	or total bovol	270		3 - Prevalence Index is ≤3.0 ¹
Leersia oryzoides		50	Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data
rice cut grass					and Remarks or on a separate sheet)
Hibiscus moscheuto	S	30	Y	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
swamp rosemallow					· · · · · · · · · · · · · · · · · · ·
3. Phragmites australis		15	N	FACW	
common reed					
4.	·				¹ Indicators of hydric soil and wetland hydrology must
					be present
5		_	. <u></u>		Definitions of Four Vegetation Strata:
_			. <u></u>		Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6			. <u> </u>		diameter at breast height (DBH), regardless of height.
Tatal Carrain OF		of total accord	400/		Continu (Church Mandrudonte acceledia accidente la continu
Total Cover: 95		of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than
Woody Vine Stratum ()	20%	or total cover	19%		3in. DBH and greater than 3.28 ft (1m) tall.
1.					Herb - All herbaceous (non-woody) plants, regardless of size,
1.					and woody plants less than 3.28 ft tall.
2.		_	· 		and woody planto loop than 0.20 ft tall.
					Woody Vine - All woody vines greater than 3.28 ft in height.
3.		_			
4.					Hydrophytic
					Vegetation
Total Cover: 0	50%	of total cover	0%		Present? Yes X No
		of total cover	0%		
Remarks: (Include photo			eparate sheet)	Herb (5-ft radius)
PEM wetland surrounded	l by <i>Pinus</i>	s <i>taed</i> a forest	Trees and	Vines	Tierb (3-triadius)
			(30-ft ra		
			(30-1114)	uius)	
			C1: /C!		
			Sapling/Shr		
			(15-ft radiu	15)	

Project/Site	L64 /High Rice	Bridge Corridor Study
Project/Site:	1-04 /HIGH KISE	Briage Corridor Study

Sampling date: 2/6/2014
Sampling point: WL-4A

3011										
Profile Des	cription: (Describe to the	depth need	ed to document the	he indicator	or confirm th	ne absence o	of indicators.)			
Depth	Matrix			Redox Fea	atures					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks		
0-4	10YR 4/2	100					silt loam	wet, many roots		
4-8+	10YR 3/1	100					silt loam	wet		
¹Type: C=Co	oncentration, D=Depletion,	RM=Reduce	ed Matrix, MS=Mas	ked Sand Gr	ains.		² Location: PL=Por	re Lining, M=Matrix.		
	Indicators: (Applicable t		•			Indicators	for Problematic Hyd	•		
Histose	,			•	e (S8) (LRR \$		1cm Muck (A9) (I			
_	Epipedon (A2)				(LRR S, T, U	_	2cm Muck (A10)	•		
	Histic (A3)			ky Mineral (F	-	, <u> </u>		(18) (outside MLRA 150A,B)		
	, ,			-		_		ain Soils (F19) (LRR P, S, T)		
	gen Sulfide (A4)			yed Matrix (F	2)	_				
_	ed Layers (A5)		Depleted M	. ,		_		Loamy Soils (F20)		
_	ic Bodies (A6) (LRR P, T,	-		Surface(F6)			(MLRA 153B)	: L (TEO)		
	Mucky Mineral (A7) (LRR F	P, T, U)		ark Surface	. ,	_	Red Parent Mater	, ,		
_	Presence (A8) (LRR U)			ressions (F8)	_		Surface (TF12) (LRR T, U)		
	luck (A9) (LRR P, T)		Marl (F10)	•		_	Other (Explain in I	Remarks)		
	ed Below Dark Surface (A	11)	Depleted O	chric (F11)	(MLRA 151)					
Thick [Dark Surface (A12)		Iron-Manga	nese Masses	s (F12) (LRR	O, P, T)	³ Indicators of hydr	ophytic vegetation and		
Coasta	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Sur	face (F13) (I	LRR P, T, U)					
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (ML	RA 151)		unless disturbed of	or problematic		
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18) (I	MLRA 150A,	150B)				
Sandy	Redox (S5)		Piedmont F	loodplain So	ils (F19) (ML	RA 149A)				
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149	A, 153C, 153D)			
Dark S	Surface (S7) (LRR P, S, T,	U)	_							
Restrictive	Layer (if observed):									
Type:										
Depth (i	nches).					Hydric Soi	Is Present?	ES X No		
Boptii (i	1101100).					11,4110 001		<u>x</u>		
Remarks:	no odors observed									
	soil too saturated to stay	in hucket he	low 8"							
	Redox concentrations ma			erve due to e	excessive moi	sture in the s	oil column			
	rtodox concontrations me	ay navo booi	i too aiiiioaii to obo	0110 000 10 1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		on column.			
	Corns of Engineers					A (I = - 1)		Diain Dagian Varaion 2.0		

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 11/13/2013 Applicant/Owner: VDOT State: VA Sampling Point: WL-5 Investigator(s): Glenn Wilson and Catherine Harold Section, Township, Range: 0-1% Landform (hillslope, terrace, etc.): drainage swale (utility ROW) Local relief (concave, convex, none): none Slope (%): Long: 76° 24' 01.95" Subregion (LRR or MLRA): LRR T 36° 47' 00.38" Datum: **WGS 84** Soil Map Unit Name: Nawney Silt Ioam N/A NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Is the Sampled Area Yes Wetland Hydrology Present? Yes Within a Wetland? No Remarks: PEM wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) Wetland is located south of I-64 without a tidal influence In utility ROW, maintained and free of woody vegetation (OHE and Sewage ROW) **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Depth (inches): 0" Wetland Hydrology Present? Saturation Present? Depth (inches): Χ No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Water is at soil surface

	Project/Site:	I-64 /High Rise Bridg	ge Corridor St	udy	
	•				Sampling date: 11/13/2013
					Sampling point: WL-5
Veg	etation (Four Strata) - Use	scientific names of	plants.		
		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree	Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.					That are OBL, FACW, or FAC: 3 (A)
2.					Total number of Dominant
-					Species across All Strata: 3 (B)
3.					
-					Percent of Dominant Species
4.					That are OBL, FACW, or FAC: 100% (A/B)
-					(4 = 7
-	Total Cover: 0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
Sanl	ing /Shrub Stratum (ft)	2070 01 10101 00101	0,0		Total % Cover of Multiply by:
	Rubus spp.	< 5	Y	FAC	OBL species x 1 =
	Tree Blackberry			1710	FACW species x 2 =
2.	Tree blackberry				FAC species
۷					FACU species
ຸ -					
3					UPL species x 5 = (A) (B)
, -					Column Totals: (A) (B) Prevalence Index = B/A =
4					Prevalence index = B/A =
5_					
-	T. (10				Hydrophytic Vegetation Indicators:
	Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	0%		x 2 - Dominance Test is >50%
	Stratum ()				3 - Prevalence Index is ≤3.0 ¹
	Arthroxon hispidus	95	Y	FAC	4 - Morphological Adaptations ¹ (Provide supporting data
	Small Carp Grass				and Remarks or on a separate sheet)
2.	Persicaria hydropiper	2	N	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
	Mild Water-Pepper				
3.	••				
-					
4.		_			¹ Indicators of hydric soil and wetland hydrology must
-					be present
5.					Definitions of Four Vegetation Strata:
•					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.		_			diameter at breast height (DBH), regardless of height.
o. <u>-</u>					diameter at breast neight (DBH), regardless of neight.
-	Total Cover: 97	50% of total cover	49%		Sapling /Shrub - Woody plants, excluding vines, less than
Ren	Total Cover. 97	20% of total cover	19%		
	du Vina Stratum ()	20% of total cover	1970		3in. DBH and greater than 3.28 ft (1m) tall.
-	dy Vine Stratum ()		Y		Horb All borbossous (non-usedu) plante regardless of sine
-	Lonicera japonica		<u>Y</u>	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
	Japanese Honeysuckle				and woody plants less than 3.28 ft tall.
2					West Was All and a second state of the control of t
					Woody Vine - All woody vines greater than 3.28 ft in height.
3					
4. <u> </u>					Hydrophytic
_					Vegetation
	Total Cover: 5	50% of total cover	3%		Present? Yes X No
		20% of total cover	1%		
Rem	arks: (Include photo numb	ers here or on a sepai	rate sheet.)		Howle /E ft modius)
					Herb (5-ft radius)
			Trees and		
			(30-ft rac	lius)	
			Sapling/Shr	ub	
			(15-ft radiu	اردا	

Project/Site:	L64 /High Rice	Bridge Corridor Study
rioject/Site.	1-04 / MIGH KISE	: Dilage Collian Study

Sampling date: 11/13/2013
Sampling point: WL-5

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Soil									
Profile Des	cription: (Describe to the	depth need	ed to document tl	he indicator	or confirm th	e absence o	f indicators.)		
Depth	Matrix			Redox Fea	atures				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks	
0-4	10YR 2/2	100			- 1) -		loam	saturated	_
4-10	10YR 3/1	100					fine sandy loam	saturated	_
	10YR 4/2	100							_
10-16	101K 4/2	100					fine sandy loam	saturated	_
									_
								-	_
									_
¹Type: C=C	oncentration, D=Depletion,	RM=Reduce	ed Matrix, MS=Mas	ked Sand Gr	ains.		² Location: PL=Pore	Lining, M=Matrix.	
Hydric Soil	Indicators: (Applicable t	o all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydri	c Soils³:	
Histos	ol (A1)		Polyvalue E	Below Surface	e (S8) (LRR S	S, T, U)	1cm Muck (A9) (LF	RR O)	
Histic	Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U)		2cm Muck (A10) (L	.RR S)	
Black	Histic (A3)		Loamy Muc	ky Mineral (F	1) (LRR O)		Reduced Vertic (F1	8) (outside MLRA 150A,B)	
Hydro	gen Sulfide (A4)		Loamy Glev	ed Matrix (F	2)		Piedmont Floodplai	n Soils (F19) (LRR P, S, T)	
	ed Layers (A5)		X Depleted M	•	,	_	 Anomalous Bright L 		
	ic Bodies (A6) (LRR P, T,	U)		Surface(F6))		(MLRA 153B)	, (5,	
_	Mucky Mineral (A7) (LRR F	-		ark Surface (Red Parent Materia	I (TF2)	
	Presence (A8) (LRR U)	, 1, 0)		ressions (F8)		_		Surface (TF12) (LRR T, U)	
	. , . ,			` ,	,	_			
	Muck (A9) (LRR P, T)		Marl (F10) (_	Other (Explain in Re	emarks)	
	ted Below Dark Surface (A1	11)		chric (F11) (
	Dark Surface (A12)				s (F12) (LRR (O, P, T)	•	phytic vegetation and	
Coasta	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present,					nust be present,	
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochric (F17) (MLRA 151) unless disturbed or problematic						
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18) (I	MLRA 150A, 1	I50B)			
Sandy	Redox (S5)		Piedmont F	loodplain So	ils (F19) (ML I	RA 149A)			
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)		
Dark S	Surface (S7) (LRR P, S, T,	U)							
	Layer (if observed):	•							
Type:	.,. (,								
туро.									
Depth (i	inches):			Hydric Soil			s Drasant? VE	S X No	
Deptii (i	inches).					riyuric 30iis	s Fresentr II	.5 <u>x</u> N0	
Remarks:									_
Remarks.									
Remarks	: Water is at soil surf	ace							

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Applicant/Owner: VDOT S

Project/Site: I-64 /High Rise Bridge Corridor S Applicant/Owner: VDOT Investigator(s): David Kwasneiwski and Glen Landform (hillslope, terrace, etc.): Toe of Slope Subregion (LRR or MLRA): LRR T	n Wilson Section,	nty: City of Chesapeak Township, Range: ief (concave, convex, none)	State: VA	Sampling Date: Sampling Point: Slope (%): Datum:	
Soil Map Unit Name: Munden-Urban land comp Are climatic / hydrologic conditions on the site typical Are Vegetation,Soil,or Hydrology Are Vegetation,Soil,or Hydrology SUMMARY OF FINDINGS-Attach site ma Hydrophytic Vegetation Present? Yes X	olex for this time of year? significantly disturbed? naturally problematic?	Yes X No Are "Normal (If needed, explain	NWI classification (If no, explain in R Circumstances" present? in any answers in Remarks	on: N/A Remarks.) Yes X	No
Hydric Soil Present? Wetland Hydrology Present? Yes X Remarks: PFO Wetland Wetland lat and long were taken approximately in the Wetland is located in median of I-64 without a tidal inf		Is the Sampled Area Within a Wetland?	Yes X	No	-
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check Surface Water (A1) X High Water Table (A2) X Saturation (A3) X Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) X Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) X Water-Stained Leaves (B9)	Aquatic Fauna (B13) Aquatic Fauna (B15) (LRR U) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living I Presence of Reduced Iron (C4) Recent Reduction in Tilled Soils (C1) Other (Explain in Remarks)	X X Roots (C3)	Surface Soil Cracks (B6) Sparsely Vegetated Con Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table Crayfish Burrows (C8) Saturation Visible on Ae Geomorphic Position (D: Shallow Aquitard (D3) FAC-Neutral Test (D5) Sphagnum moss (D8) (L) incave Surface (Bi e (C2) irial Imagery (C9) 2)	8)
Surface Water Present? Yes No X Water Table Present? Yes X No Saturation Present? Yes X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring w	Depth (inches): Depth (inches):		l Hydrology Present?	Yes X	No
Remarks: Data recorded in February, with over 0.5" o Iron oxide bacteria observed on surface.	f precip in the previous week.				

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
•				Sampling date: <u>2/6/2014</u>
				Sampling point: WL-6
Vegetation (Four Strata) - U				T
T 0: (D) : (0)	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)		Species?	Status	Number of Dominant species
1. Acer rubrum	50	<u> </u>	FAC	That are OBL, FACW, or FAC:3(A)
red maple 2.	_			Total number of Dominant
Z	_			Species across All Strata: 3 (B)
3.	_			Species across Air Strata.
o				Percent of Dominant Species
4.	_			That are OBL, FACW, or FAC: 100% (A/B)
	_			111at all 0 0 5 2, 1 7 to 11 7 to 1
Total Cover: 50	50% of total cover	25%		
	20% of total cover	10%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1. Acer rubrum	70	Y	FAC	OBL species x 1 =
red maple				FACW species x 2 =
2	_			FAC species x 3 =
	_			FACU species x 4 =
3.				UPL species x 5 =
. —				Column Totals:(A)(B)
4				Prevalence Index = B/A =
	_			
5				Hydrophytic Vegetation Indicators:
Total Cover: 70	50% of total cover	35%		1 - Rapid Test for Hydrophytic Vegetation
Total Cover. 70	20% of total cover	14%		x 2 - Dominance Test is >50%
Herb Stratum ()	2070 Of total cover	1470		3 - Prevalence Index is ≤3.0¹
1	_			4 - Morphological Adaptations¹ (Provide supporting data
1.	_			and Remarks or on a separate sheet)
2.	_			Problematic Hydrophytic Vegetation ¹ (Explain)
-	_			1 robioficial Trydrophyllo Vogotation (Explain)
3.	_			
	_			
4.	_			¹ Indicators of hydric soil and wetland hydrology must
				be present
5.				Definitions of Four Vegetation Strata:
	_			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
-	_			
Total Cover: 0	50% of total cover	0%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	0%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				Hade All Lada and Comment Nations and Property of the Comment of t
Toxicodendron radicans		<u> </u>	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
poison ivy	_			and woody plants less than 3.28 ft tall.
2	_			Woody Vine - All woody vines greater than 3.28 ft in height.
3.				violety vine - All woody vines greater than 3.20 it in height.
J				
4.	_			Hydrophytic
	_		-	Vegetation
Total Cover: 70	50% of total cover	35%		Present? Yes X No
	20% of total cover	14%		
Remarks: (Include photo nur	mbers here or on a se			/e c !: . \
				Herb (5-ft radius)
		Trees and		
		(30-ft rad	dius)	
		Sapling/Shr		
		(15-ft radiu	ıs)	

Project/Site: I-64 /High Rise Bridge Corridor Study

Sampling date: 2/6/2014
Sampling point: WL-6

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Soil								
Profile Des	scription: (Describe to the	depth need	ed to document th	ne indicator	or confirm th	e absence o	f indicators.)	
Depth	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-4	10YR 3/1	100					fine sandy loam	wet, many roots
4-9	10YR 5/1	100					sand	wet
9-12+	10YR 4/1	100					sandy clay loam	wet
	· 							_
1T. max C. C	Concentration, D=Depletion,	DM Dadue	d Matrix MC Mas	lead Cand Cr	-ine		21 agation, DL Dava	Lining M. Matrix
			,		ains.	la dia ataua	² Location: PL=Pore	
-	I Indicators: (Applicable t	to all LRRS,		· -	- (CO) (LDD (for Problematic Hydri	
	sol (A1)				e (S8) (LRR S	_	_ 1cm Muck (A9) (LF	•
	Epipedon (A2)				(LRR S, T, U)	_	_ 2cm Muck (A10) (L	•
	Histic (A3)			ky Mineral (F		_	_ `	8) (outside MLRA 150A,B)
Hydro	gen Sulfide (A4)			ed Matrix (F	2)	_	Piedmont Floodplai	n Soils (F19) (LRR P, S, T)
Statific	ed Layers (A5)		x Depleted M	atrix (F3)		_	Anomalous Bright L	oamy Soils (F20)
Organ	nic Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6))		(MLRA 153B)	
5 cm l	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface (F7)	_	Red Parent Materia	I (TF2)
Muck	Presence (A8) (LRR U)		Redox Dep	ressions (F8))	_	Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm N	Muck (A9) (LRR P, T)		Marl (F10) ((LRR U)		_	Other (Explain in Re	emarks)
Deple	ted Below Dark Surface (A	11)	Depleted O	chric (F11) (MLRA 151)			
Thick	Dark Surface (A12)		Iron-Manga	nese Masses	(F12) (LRR	O, P, T)	3Indicators of hydro	phytic vegetation and
Coast	al Prairie Redox (A16) (ML	RA 150A)	Umbric Sur	Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present,				nust be present,
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (ML I	RA 151)		unless disturbed or	problematic
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18) (I	MLRA 150A, 1	150B)		
Sand	Redox (S5)		Piedmont F	loodplain So	ils (F19) (ML I	RA 149A)		
	ed Matrix (S6)			•	. , .	•	, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)		Ü	, , ,	•		
	Layer (if observed):	-,						
Type:								
туро.								
Denth ((inches):					Hydric Soils	s Present? VF	S X No
_ Бери ((IIIOIIes).					riyunc oon	STIESCHE: IL	<u> </u>
Remarks:	no odors observed				i_			
rtomanto.	no odors observed							

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake

Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/6/2014							
Applicant/Owner: VDOT				State: VA	Sampling Point: WL-7		
Investigator(s): David Kwasniev	wski and Glenn Wil	son Section,	Township, Range	e:	•		
Landform (hillslope, terrace, etc.):	Toe of Slope	Local rel	ief (concave, conv	vex, none): none	Slope (%): 0-1%		
Subregion (LRR or MLRA): LRR	Т	Lat: 36° 47' 06	6.21" Lo	ong: 76° 23' 45.79"	Datum: WGS 84		
Soil Map Unit Name: Munden-Urk	ban land complex;	Dragston; Conetoe-Ches	sapeake-Tetot	um complex NWI classific	ation: N/A		
Are climatic / hydrologic conditions of	on the site typical for this	time of year?	Yes X No	(If no, explain i	n Remarks.)		
Are Vegetation ,Soil	or Hydrology	significantly disturbed?	Are	e "Normal Circumstances" preser	nt? Yes X No		
Are Vegetation ,Soil	or Hydrology	naturally problematic?	(If need	led, explain any answers in Rema	arks.)		
	·	<u> </u>					
SUMMARY OF FINDINGS-A	ttach site map sh	owing sampling point	locations, tra	nsects, important feature	es, etc.		
Hydrophytic Vegetation Present?	Yes X	No					
Hydric Soil Present?	Yes X	No	Is the Sam	pled Area			
Wetland Hydrology Present?	Yes X	No	Within a W	/etland? Yes X	(No		
Domorko: DEO Watland							
Remarks: PFO Wetland Wetland lat and long were taken app	orovimately in the middl	of the wetland (not soil hore	location)				
Wetland is located in median of I-64	•		iocationj				
	marout a add mildono	•					
HYDROLOGY							
Wetland Hydrology Indicators:				Secondary Indicators (minir	mum of two required)		
Primary Indicators (minimum of one	is required; check all th	at apply)		Surface Soil Cracks ((B6)		
X Surface Water (A1)	Aqu	atic Fauna (B13)		Sparsely Vegetated C	Concave Surface (B8)		
X High Water Table (A2)	Mar	Deposits (B15) (LRR U)		X Drainage Patterns (B	10)		
X Saturation (A3)	Hyd	rogen Sulfide Odor (C1)		Moss Trim Lines (B16	6)		
X Water Marks (B1)	Oxio	dized Rhizospheres on Living	Roots (C3)	Dry-Season Water Ta	able (C2)		
Sediment Deposits (B2)	Pre	sence of Reduced Iron (C4)		Crayfish Burrows (C8	3)		
X Drift Deposits (B3)	Rec	ent Reduction in Tilled Soils (C6)	Saturation Visible on	Aerial Imagery (C9)		
Algal Mat or Crust (B4)	—— Thir	Muck Surface (C7)	,	Geomorphic Position			
X Iron Deposits (B5)		er (Explain in Remarks)		Shallow Aquitard (D3			
Inundation Visible on Aerial Im		(=		FAC-Neutral Test (D5			
X Water-Stained Leaves (B9)				Sphagnum moss (D8	*		
X Water Starred Edayes (26)					, (
Field Observations:							
Surface Water Present? Yes	X No	Depth (inches):	2"				
Water Table Present? Yes	No	Depth (inches):	0"				
Saturation Present? Yes	X No	Depth (inches):	0"	Wetland Hydrology Present?	Yes X No		
(includes capillary fringe)							
Describe Recorded Data (stream ga	uge, monitoring well, as	rial photos, previous inspection	ns), if available:				
Remarks: Data recorded in February	•	p in the previous week.					
Iron oxide bacteria observed on leaf	pack in surface water.						
1							
1							

Project/Site:	I-64 /High Rise Brid	ge Corridor St	tudy	
•	-			Sampling date: 2/6/2014
				Sampling point: WL-7
Vegetation (Four Strata) -			,	1
T - Otro from /Diet einen	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: 1. Acer rubrum	ft) % Cover 60	Species?	Status FAC	Number of Dominant species That are OBL, FACW, or FAC: 3 (A)
red maple			FAC	That are OBL, FACW, OF FAC (A)
Liquidambar styraciflua	25	Y	FAC	Total number of Dominant
sweet gum		<u>.</u>	1710	Species across All Strata: 3 (B)
3.				(2)
	_			Percent of Dominant Species
4.	_			That are OBL, FACW, or FAC:100% (A/B)
	_			
Total Cover: 85	50% of total cover	43%		
	20% of total cover	17%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1. Acer rubrum	40	<u> </u>	FAC	OBL species x 1 =
red maple 2.				FACW species x 2 = FAC species x 3 =
Z	_			FAC species x 3 = FACU species x 4 =
3.				UPL species x 5 =
<u> </u>				Column Totals: (A) (B)
4.				Prevalence Index = B/A =
5				
				Hydrophytic Vegetation Indicators:
Total Cover: 40	50% of total cover			1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	8%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1				4 - Morphological Adaptations¹ (Provide supporting data
				and Remarks or on a separate sheet)
2				Problematic Hydrophytic Vegetation¹ (Explain)
3.				
J	_			
4.				¹ Indicators of hydric soil and wetland hydrology must
		<u></u>		be present
5.	_			Definitions of Four Vegetation Strata:
			-	Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.	_			diameter at breast height (DBH), regardless of height.
	_			
Total Cover: 0	50% of total cover	0%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	0%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()	_			Harle All harlessays (says yearly) plants as says less at size
1				Herb - All herbaceous (non-woody) plants, regardless of size,
2.				and woody plants less than 3.28 ft tall.
Z				Woody Vine - All woody vines greater than 3.28 ft in height.
3.	<u> </u>			Troody Tino 7 in Hoody Tinos groater than o.20 it in Holgini
4.				Hydrophytic
				Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
	20% of total cover	0%		
Remarks: (Include photo n	umbers here or on a se	eparate sheet	i.)	Herb (5-ft radius)
		Trees and	Vines	
		(30-ft rad		
		(00.11.0.0	,	
				17 () 1
		Sapling/Shr	ruh	
		(15-ft radiu		
		\		

Project/Site: I-64 /High Rise Bridge Corridor Study

Sampling date: 2/6/2014
Sampling point: WL-7

Depth	Matrix			Redox Fea	tures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
·5	10YR 3/1	100					fine sandy loam	wet
9	10YR 4/1	100					sand	wet
9-16+ 10YR 5/1 100							sand	wet
								-
/ne: C-C	oncentration, D=Depletion,	PM-Reduce	d Matrix MS-Mas	ed Sand Gra	nine		² Location: PL=Pore	Lining M-Matrix
_	Indicators: (Applicable to					Indicators	for Problematic Hydr	<u> </u>
Histoso		- u <u>-</u> o, .			(S8) (LRR S		1cm Muck (A9) (L l	
Histic Epipedon (A2) Thin Dark Surface (S9)						_	2cm Muck (A10) (I	-
-	Histic (A3)			ky Mineral (F		_		8) (outside MLRA 150A,B)
	gen Sulfide (A4)			ed Matrix (F2		_		in Soils (F19) (LRR P, S, T)
	d Layers (A5)		X Depleted M	•	,	_	Anomalous Bright I	
_	c Bodies (A6) (LRR P, T, I	J)		Surface(F6)		_	(MLRA 153B)	, , -,
_ ~	Mucky Mineral (A7) (LRR P	•		ark Surface (F	- 7)		Red Parent Materia	al (TF2)
	Presence (A8) (LRR U)	• •		essions (F8)	*	_		Surface (TF12) (LRR T, U)
_	uck (A9) (LRR P, T)		Marl (F10) (` '		_	Other (Explain in R	
_	ed Below Dark Surface (A1	1)		chric (F11) (I	MLRA 151)	_	_ ` '	,
Thick [Dark Surface (A12)	,		, , ,	(F12) (LRR C), P, T)	3Indicators of hydro	phytic vegetation and
Coastal Prairie Redox (A16) (MLRA 150A) Umbric Surface (F13) (L							wetland hydrology i	· · -
Sandy Mucky Mineral (S1) (LRR, O, S) Delta Ochric (F17) (MLI					A 151)		unless disturbed or	problematic
Sandy	Gleyed Matrix (S4)	. ,	Reduced Ve	ertic (F18) (N	ILRA 150A, 1	50B)		
Sandy	Redox (S5)		Piedmont F	loodplain Soil	s (F19) (MLF	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loamy	Soils (F20)	MLRA 149A	A, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)						
strictive	Layer (if observed):							
Type:								
Depth (i	nches):					Hydric Soil	s Present? YI	ES <u>X</u> No
	no odors observed							
	no odors observed							
	no odors observed							
	no odors observed							
	no odors observed							
	no odors observed							
	no odors observed							
	no odors observed							
	no odors observed							
	no odors observed							
	no odors observed							
emarks:	no odors observed							
	no odors observed							
	no odors observed							
	no odors observed							
	no odors observed							

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake

Project/Site: I-64 /High Rise Br Applicant/Owner: VDOT	City/Co	City/County: City of Chesapeake Sampling Date: 10/28/2 State: VA Sampling Point: WL-8					
Investigator(s): David Kwasne	n Saction	Section, Township, Range:					
Landform (hillslope, terrace, etc.):	Flat		i, rownship, Ranç elief (concave, co		none	Clans (0/)	0-0.5%
Subregion (LRR or MLRA): LRR		Lat: 36° 46' 1	,	Long: <u>76° 2</u>		Slope (%): Datum:	WGS 84
9 \		Lat: 30 40 1	0.21	Long: <u>70 2</u>			WG3 64
Soil Map Unit Name: Tomotley-E Are climatic / hydrologic conditions		on of voor?	Yes X N	alo.	NWI classifi	in Remarks.)	
, ,	**	•			rcumstances" prese		No
Are Vegetation ,Soil Soil	_ : -:	significantly disturbed? naturally problematic?					No
Are Vegetation,Soil	or Hydrology	naturally problematic:	(II Hee	eueu, expiairi a	any answers in Rem	iaiks.)	
SUMMARY OF FINDINGS-A	Attach site man shov	ving sampling poin	t locations, tr	ansects, in	nportant featur	es. etc.	
Hydrophytic Vegetation Present?	Yes X	No		<u>u</u>	iiportant routui	00, 0101	
Hydric Soil Present?	Yes X	No	Is the Sa	mpled Area			
Wetland Hydrology Present?	Yes X	No		Wetland?	Yes	X No	
	163 _/_		Within a	wettana.		<u> </u>	_
Remarks: PFO Weland							
Wetland lat and long were taken ap Wetland is located northeast of I-64		the wetland (not soil bore	e location)				
veiland is located northeast of 1-64	without a tidal influence						
HYDROLOGY							
Wetland Hydrology Indicators:						nimum of two required	d)
Primary Indicators (minimum of one					Surface Soil Cracks	` '	
Surface Water (A1)	 ·	Fauna (B13)				Concave Surface (B	8)
High Water Table (A2)		eposits (B15) (LRR U)			Drainage Patterns (·	
Saturation (A3)		en Sulfide Odor (C1)			Moss Trim Lines (B	= -	
Water Marks (B1)		ed Rhizospheres on Living	g Roots (C3)		Dry-Season Water ⁻		
Sediment Deposits (B2)	Preser	ce of Reduced Iron (C4)		<u>X</u> (Crayfish Burrows (C	(8)	
Drift Deposits (B3)	Recent	Reduction in Tilled Soils	(C6)	;	Saturation Visible or	n Aerial Imagery (C9)	
Algal Mat or Crust (B4)	Thin M	uck Surface (C7)	(C7) Geomorphic Position (D2)				
Iron Deposits (B5)	Other (Explain in Remarks)		3)			
Inundation Visible on Aerial Ir	magery (B7)		X FAC-Neutral Test (
X Water-Stained Leaves (B9)					Sphagnum moss (I	08) (LRR T, U)	
Field Observations:							
Surface Water Present? Yes	No X	Depth (inches):	-				
Water Table Present? Yes	No X	Depth (inches):					
Saturation Present? Yes	No X	Depth (inches):		Wetland H	ydrology Present?	Yes X	No
(includes capillary fringe)		().			,		
Describe Recorded Data (stream g	auge, monitoring well, aeria	photos, previous inspect	tions), if available:	:			
-							
Remarks:							

Project/Site:	I-64 /High Rise Bridg	ge Corridor St	udy	
•				Sampling date: 10/28/2013
				Sampling point: WL-8
Vegetation (Four Strata) - Use	scientific names of			
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1. Acer rubrum	40	Υ	FAC	That are OBL, FACW, or FAC:3(A)
Red Maple				
2. <u>Liquidambar styraciflua</u>	20	Y	FAC	Total number of Dominant
Sweet-Gum				Species across All Strata: 3 (B)
3. Quercus nigra	10	N	FAC	
Water Oak				Percent of Dominant Species
4. Nyssa sylvatica	5	N	FAC	That are OBL, FACW, or FAC: 100% (A/B)
Black Tupelo				
Total Cover: 75	50% of total cover	38%		
	20% of total cover	15%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)	<u> </u>			Total % Cover of Multiply by:
1. Clethra alnifolia	60	Υ	FACW	OBL species x 1 =
Coastal Sweet-Pepperbush				FACW species x 2 =
2. Vaccinium corymbosum	15	N	FACW	FAC species x 3 =
Highbush Blueberry				FACU species x 4 =
3. Magnolia virginiana	5	N	FACW	UPL species x 5 =
Sweet-Bay				Column Totals: (A) (B)
4.				Prevalence Index = B/A =
5	-			
				Hydrophytic Vegetation Indicators:
Total Cover: 80	50% of total cover	40%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	16%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.				4 - Morphological Adaptations¹ (Provide supporting data
				and Remarks or on a separate sheet)
2.				Problematic Hydrophytic Vegetation¹ (Explain)
				1 robiomatio riyarophytio vogotation (Explain)
3.				
3				
4.				¹ Indicators of hydric soil and wetland hydrology must
4	- —			
5.				be present Definitions of Four Vegetation Strata:
J	- —			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.				diameter at breast height (DBH), regardless of height.
o	- —			diameter at breast fleight (DBH), regardless of fleight.
Total Caucari 0				Capling /Chrub Woody plants evaluding vines less than
Total Cover: 0	50% of total cover	0%		Sapling /Shrub - Woody plants, excluding vines, less than
Manda Vina Ctratana ()	20% of total cover	0%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				Hade All back assess (as a suspend) about a second as a fair-
1				Herb - All herbaceous (non-woody) plants, regardless of size,
	- —			and woody plants less than 3.28 ft tall.
2				
				Woody Vine - All woody vines greater than 3.28 ft in height.
3				
<u> </u>	- ——			
4				Hydrophytic
				Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
	20% of total cover	0%		
Remarks: (Include photo number	ers here or on a separ	rate sheet.)		Herb (5-ft radius)
		Trees and	Vinos	Tierb (5 it radius)
				—
		(30-ft rad	aius)	
	Г			
		Sapling/Shr	ub	
		(15-ft radiu	ıs)	
	L			

Project/Site: I-64 /High Rise Bridge Corridor Study

Sampling date: 10/28/2013
Sampling point: WL-8

Soil									
Profile Des	cription: (Describe to the	depth need	ed to document tl	ne indicator	or confirm th	e absence o	f indicators.)		
Depth	Matrix			Redox Fea	tures				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks	
0-1	5YR 2.5/2	90	10YR 3/3	10			loam		
1-11	7.5YR 2.5/1	100					sandy loam	fine	
11-15	7.5YR 3/1	100					sandy loam	fine, some clay	
15-21	7.5YR 4/1	100					sandy clay loam	mie, ceme olay	
7.511(4/1 100							canay clay loan.		
								-	
1Typo: C-C	oncentration, D=Depletion,	PM-Poduce	d Matrix MS_Mac	kod Sand Gr	nine		² Location: PL=Pore	Lining M-Matrix	
	Indicators: (Applicable to				allio.	Indicators	for Problematic Hydri	¥.	
Histos		o ali errs,		•	(S8) (LRR S		•		
	` '				· , ·	· · · · —	1cm Muck (A9) (LI	•	
_	Epipedon (A2)				(LRR S, T, U)	' –	_ 2cm Muck (A10) (L	•	
	Histic (A3)			ky Mineral (F		_		8) (outside MLRA 150A,B)	
— · ·	gen Sulfide (A4)			ed Matrix (F2	2)			in Soils (F19) (LRR P, S, T)	
_	ed Layers (A5)		X Depleted M	. ,		_	_ Anomalous Bright I	_oamy Soils (F20)	
_	ic Bodies (A6) (LRR P, T, I	-		Surface(F6)			(MLRA 153B)		
_	Mucky Mineral (A7) (LRR P	P, T, U)	Depleted D	ark Surface (F7)		Red Parent Materia	,	
Muck f	Presence (A8) (LRR U)		Redox Dep	ressions (F8)		_	Very Shallow Dark	Surface (TF12) (LRR T, U)	
1cm M	luck (A9) (LRR P, T)		Marl (F10) ((LRR U)		_	Other (Explain in R	emarks)	
Deplet	ted Below Dark Surface (A1	1)	Depleted O	chric (F11) (MLRA 151)				
Thick I	Dark Surface (A12)		Iron-Manganese Masses (F12) (LRR O, P, T)				3Indicators of hydro	phytic vegetation and	
Coasta	al Prairie Redox (A16) (ML	RA 150A)	Umbric Sur	face (F13) (L	.RR P, T, U)		wetland hydrology r	must be present,	
Sandy Mucky Mineral (S1) (LRR, O, S) Del				Delta Ochric (F17) (MLRA 151) unless disturbed or problematic					
Sandy Gleyed Matrix (S4) Reduced Vertic (F18				ertic (F18) (N	MLRA 150A, 1	150B)			
Sandy	Redox (S5)		Piedmont F	loodplain Soi	ls (F19) (MLI	RA 149A)			
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)		
Dark S	Surface (S7) (LRR P, S, T,	U)							
	Layer (if observed):	•							
Type:	,								
Depth (i	inches):					Hydric Soils	s Present? YE	ES X No	
						,		<u> </u>	
Remarks:					1				

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 11/11/2013 Applicant/Owner: VDOT State: VA Sampling Point: WL-9 Investigator(s): David Kwasneiwski and Glenn Wilson Section, Township, Range: Landform (hillslope, terrace, etc.): Flat 0-0.5% Local relief (concave, convex, none): none Slope (%): ____ Long: <u>76° 2</u>1' 29.41" Subregion (LRR or MLRA): LRR T Lat: 36° 45' 43.28" Datum: **WGS 84** Soil Map Unit Name: Tomotley-Urban land-Nimmo complex N/A NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes Wetland Hydrology Present? Yes No Within a Wetland? Yes Remarks: PFO Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) Wetland is located in the median of I-64 without a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Surface Water (A1) Aquatic Fauna (B13) High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Yes Depth (inches): Saturation Present? Depth (inches): Wetland Hydrology Present? Χ No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

	Project/Site:	I-64 /High Rise Bridg	ge Corridor St	udy	
	·	·			Sampling date: 11/11/2013
					Sampling point: WL-9
Ve	getation (Four Strata) - Use	scientific names of	plants.		, •. —
	•	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	Acer rubrum	40	Y	FAC	That are OBL, FACW, or FAC: 7 (A)
	Red Maple	<u> </u>			(*,
2.	Liquidambar styraciflua	10	Y	FAC	Total number of Dominant
	Sweet-Gum			1710	Species across All Strata: 7 (B)
3.	<u> </u>	_		-	(S)
٥.					Percent of Dominant Species
4.		_		-	That are OBL, FACW, or FAC: 100% (A/B)
4.		_			111at are OBL, 1 ACW, 01 1 AC(A/B)
	Total Cover: 50	50% of total cover	25%		
	Total Cover. 50	20% of total cover	10%		Prevalence Index worksheet:
_	1: (0) 1 0: (1)	20% of total cover	10%		
	pling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1.	Acer rubrum	20	Y	FAC	OBL species x 1 =
_	Red Maple				FACW speciesx 2 =
2.	Liquidambar styraciflua	10	Y	FAC	FAC species x 3 =
	Sweet-Gum				FACU species x 4 =
3.	Ulmus americana	3	N	<u>FAC</u>	UPL species x 5 =
	American Elm	_			Column Totals:(A)(B)
4.	Quercus palustris	3	N	FACW	Prevalence Index = B/A =
	Pin Oak	_			
5		_			
		_			Hydrophytic Vegetation Indicators:
	Total Cover: 36	50% of total cover	18%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	7%		X 2 - Dominance Test is >50%
He	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Juncus effusus		Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data
	Lamp Rush				and Remarks or on a separate sheet)
2.	Arundinaria gigantea		Y	FACW	Problematic Hydrophytic Vegetation¹ (Explain)
	Giant Cane			17.011	1 robiematic rijaroprijao vogotatiem (Explain)
3.	Old It Gaile				
J.	-	_		-	
4.	-				¹ Indicators of hydric soil and wetland hydrology must
4.		_			
_	-				be present Definitions of Four Vegetation Strata:
5.	-				
_					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
		-			
	Total Cover: 25	50% of total cover	13%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	5%		3in. DBH and greater than 3.28 ft (1m) tall.
	oody Vine Stratum ()				
1.	Campsis radicans	5	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
	Trumpet-Creeper	_			and woody plants less than 3.28 ft tall.
2.					
		_			Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
4.					Hydrophytic
					Vegetation
	Total Cover: 5	50% of total cover	3%		Present? Yes X No
		20% of total cover	1%		
Re	marks: (Include photo numb	ers here or on a sepai	rate sheet.)		
	` '	· ·			Herb (5-ft radius)
			Trees and	Vines	
			(30-ft rad	dius)	7
				·	
			Carlin-/Cl	ub _	
			Sapling/Shr		
			(15-ft radiu	is)	
		L			

Designation of the Control of the Co	dalam Otronio
Project/Site: I-64 /High Rise Bridge Corri	idor Study

Sampling date: 11/11/2013
Sampling point: WL-9

Depth	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
-2	7.5YR 2.5/1	100					silt loam	organic layer moist
-14	10YR 3/2	100					fine sandy loam	wet
14+ 10YR 3/2 100							sandy clay loam	hard layer wet
								-
Type: C=C	oncentration, D=Depletion,	RM=Reduce	ed Matrix. MS=Mas	ked Sand Gr	ains.		² Location: PL=Pore	Lining, M=Matrix.
	Indicators: (Applicable t		·			Indicators	for Problematic Hydri	<u>*</u>
	ol (A1)				e (S8) (LRR S	S, T, U)	1cm Muck (A9) (LI	RR O)
	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10) (I	•
	Histic (A3)			ky Mineral (F	-	_		8) (outside MLRA 150A,B)
	gen Sulfide (A4)			ed Matrix (F		_	-	in Soils (F19) (LRR P, S, T)
	ed Layers (A5)		X Depleted M	•	,	_	Anomalous Bright I	
	ic Bodies (A6) (LRR P, T,	U)		Surface(F6))	_	(MLRA 153B)	, (-/
_	Mucky Mineral (A7) (LRR P	-		ark Surface (Red Parent Materia	al (TF2)
	Presence (A8) (LRR U)	, -, -,		ressions (F8)		_		Surface (TF12) (LRR T, U)
	fuck (A9) (LRR P, T)		Marl (F10) (Other (Explain in R	
	ted Below Dark Surface (A1	11)		chric (F11) (MI RA 151)	_	Other (Explain III II	omano,
	Dark Surface (A12)	' ' '		. , ,	(F12) (LRR () P T)	3Indicators of hydro	phytic vegetation and
_	al Prairie Redox (A16) (ML	PA 150A)			LRR P, T, U)	J, I , I ,	wetland hydrology r	. , ,
	` ' '	•			· · · · · ·		unless disturbed or	·
Sandy Mucky Mineral (S1) (LRR, O, S) Delta Ochric (F17) (N Sandy Gleyed Matrix (S4) Reduced Vertic (F18)					=	EOD)	uniess disturbed or	problematic
				. , ,	•	•		
	Redox (S5)				ils (F19) (MLI	•	\ 450C 450D\	
	ed Matrix (S6)	118	Anomaious	Blight Loani	y 30115 (F20)	(IVILKA 149A	A, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)						
_	Layer (if observed):							
Type:								
Donth (inchas):					Hydric Soil	Is Present? YE	ES Y No
Depth (inches).					nyunc son	is rieseill?	ES <u>X</u> No
Remarks:								
tomanto.								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region ge Corridor Study City/County: City of Chesapeake

Project/site. 1-04 / High Kise Bridge Comuci	Study	City/County. City of Ci		Sampling Date. <u>2/1/2014</u>
Applicant/Owner: VDOT			State: VA	Sampling Point: WL-11
Investigator(s): David Kwasneiwski and Gle	nn Wilson	Section, Township, Range	e:	
Landform (hillslope, terrace, etc.): flat		Local relief (concave, con	nvex, none): none	Slope (%): 0-1%
Subregion (LRR or MLRA): LRR T	Lat: 3	6° 45' 33.94" L	.ong: 76° 20' 35.71"	Datum: WGS 84
Soil Map Unit Name: Udorthents-Urban land	complex		NWI classifica	ation: N/A
Are climatic / hydrologic conditions on the site typic		Yes X No	(If no, explain ir	n Remarks.)
Are Vegetation,Soil,or Hydrology	significantly dist		re "Normal Circumstances" presen	,
Are Vegetation ,Soil ,or Hydrology			ded, explain any answers in Rema	
, se regenation	natarany problem	(aou, explain any anomono in mona	
SUMMARY OF FINDINGS-Attach site m	an showing samplin	noint locations tra	nsects important features	s etc
		g point locations, tra	maceta, important reatures	3, 010.
· · · · · · · · · · · · · · · · · · ·	_		and all Area	
<u> </u>		_ Is the San		
Wetland Hydrology Present? Yes _>	<u>No</u>	_ Within a W	Vetland? Yes X	No
Remarks: PFO Wetland		•		
Wetland lat and long were taken approximately in the	•	ot soil bore location)		
This wetland is located to the north of I-64 without a	a tidal influence			
HYDROLOGY				
Wetland Hydrology Indicators:			Secondary Indicators (minin	num of two required)
Primary Indicators (minimum of one is required; che	ack all that apply)		Surface Soil Cracks (F	· · · · · · · · · · · · · · · · · · ·
			- - `	,
Surface Water (A1)	Aquatic Fauna (B13)	DD 11)	Sparsely Vegetated C	
X High Water Table (A2)	Marl Deposits (B15) (L	-	X Drainage Patterns (B1	
X Saturation (A3)	_ Hydrogen Sulfide Odor	,	Moss Trim Lines (B16	
Water Marks (B1)	 Oxidized Rhizospheres 	• ,	Dry-Season Water Ta	
Sediment Deposits (B2)	Presence of Reduced I	` '	Crayfish Burrows (C8)	
X Drift Deposits (B3)	Recent Reduction in Til	led Soils (C6)	Saturation Visible on A	Aerial Imagery (C9)
Algal Mat or Crust (B4)	Thin Muck Surface (C7))	Geomorphic Position	(D2)
X Iron Deposits (B5)	Other (Explain in Rema	rks)	Shallow Aquitard (D3))
Inundation Visible on Aerial Imagery (B7)			FAC-Neutral Test (D5	5)
X Water-Stained Leaves (B9)			Sphagnum moss (D8)	(LRR T, U)
Field Observations			1	
Field Observations:	V 5 4 7 1 1			
Surface Water Present? Yes No	X Depth (inches):	- 0"		
Water Table Present? Yes X No	Depth (inches):	0"		٧
Saturation Present? Yes X No	Depth (inches):		Wetland Hydrology Present?	Yes <u>X</u> No
(includes capillary fringe)				
Describe Recorded Data (stream gauge, monitoring	j well, aerial photos, previol	is inspections), if available:		
Remarks:				

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
-				Sampling date: <u>2/7/2014</u>
				Sampling point: WL-11
Vegetation (Four Strata) - l	Jse scientific names	of plants.		
, ,	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft	t) % Cover	Species?	Status	Number of Dominant species
Liquidambar styraciflua		Υ	FAC	That are OBL, FACW, or FAC:3(A)
Sweet-Gum				
2. Acer rubrum	10	<u> </u>	FAC	Total number of Dominant
Red maple	_ _			Species across All Strata: 3 (B)
3. Ulmus americana	5	N	FAC	
American elm	_			Percent of Dominant Species
4	_			That are OBL, FACW, or FAC: 100% (A/B)
	-			
Total Cover: 40	50% of total cover	20%		
6 II (6) I 6:	20% of total cover	8%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
Liquidambar styraciflua	10	Y	FAC	OBL species x 1 =
Sweet-Gum	_			FACW species x 2 =
2	_			FAC species x 3 =
	_			FACU species x 4 =
3	_			UPL species x 5 =
	_			Column Totals:(A)(B)
4	_			Prevalence Index = B/A =
_	_			
5				
	_			Hydrophytic Vegetation Indicators:
Total Cover: 10	50% of total cover	5%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	2%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1				4 - Morphological Adaptations ¹ (Provide supporting data
				and Remarks or on a separate sheet)
2.	<u> </u>			Problematic Hydrophytic Vegetation ¹ (Explain)
3.				
4.				¹ Indicators of hydric soil and wetland hydrology must
				be present
5.				Definitions of Four Vegetation Strata:
				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.				diameter at breast height (DBH), regardless of height.
Total Cover: 0	50% of total cover	0%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	0%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				, ,
1.				Herb - All herbaceous (non-woody) plants, regardless of size,
				and woody plants less than 3.28 ft tall.
2.				
				Woody Vine - All woody vines greater than 3.28 ft in height.
3.				
4.				Hydrophytic
				Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
	20% of total cover	0%		
Remarks: (Include photo nu		parate sheet.)		
•				Herb (5-ft radius)
		Trees and		
		(30-ft rad	dius)	
		Sapling/Shr	ub]	
		(15-ft radiu		
		(±3-11 lault	13)	

Project/Site	L64 /High Ric	se Bridge Corridor St	tudy
riojeci/Site.	1-04 / HIGH KIS	se bilage Collian Si	luuy

Sampling date: 2/7/2014
Sampling point: WL-11

Depth	cription: (Describe to the Matrix	uopiii nood	ou to uooumone ti	Redox Fea		0 45001100 0	or maioatoro.,	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc²	Texture	Remarks
0-4	10YR 3/1	100					fine sandy loam	
4-8	10YR 6/2	80	10YR 5/4	20			fine sandy loam	
8-12	10YR 6/1	90	7.5YR 4/4	10			clay	
12-16+	7.5YR 5/1	100					sandy clay	
/	oncentration, D=Depletion,				ains.		² Location: PL=Pore Linin	O,
	Indicators: (Applicable t	to all LRRs,			(00) (I BB 6		for Problematic Hydric Soi	
	ol (A1)				e (S8) (LRR S	_	1cm Muck (A9) (LRR O)	
	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10) (LRR S	•
	Histic (A3)			ky Mineral (F		_	Reduced Vertic (F18) (o	
	gen Sulfide (A4)			ed Matrix (F2	2)	_	Piedmont Floodplain Soil	
	ed Layers (A5)		X Depleted M			_	Anomalous Bright Loamy	Soils (F20)
_ `	ic Bodies (A6) (LRR P, T,	•		Surface(F6)			(MLRA 153B)	
	Mucky Mineral (A7) (LRR F	P, T, U)		ark Surface (*	_	Red Parent Material (TF2	'
	Presence (A8) (LRR U)			ressions (F8)		_	Very Shallow Dark Surface	
	Muck (A9) (LRR P, T)		Marl (F10)			_	Other (Explain in Remark	(s)
	ted Below Dark Surface (A1	11)		chric (F11) (•			
	Dark Surface (A12)				(F12) (LRR (D, P, T)	3Indicators of hydrophytic	=
Coastal Prairie Redox (A16) (MLRA 150A) Umbric Surface (F13) (· · · · · ·		wetland hydrology must b	•
	Mucky Mineral (S1) (LRR	, O, S)		c (F17) (MLI	-		unless disturbed or probl	ematic
-	Gleyed Matrix (S4)				MLRA 150A, 1	-		
	Redox (S5)				ils (F19) (MLI	•		
	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149 <i>A</i>	A, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)						
_	Layer (if observed):							
Type:								
5								
Depth (inches):					Hydric Soil	Is Present? YES 2	(No
D								
Remarks:								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake

Project/Site: I-64 /High Rise Brid	dge Corridor S	tudy	City/County: (City of Chesa	ıpeake		Sampling Date: <u>2/6/2014</u>
Applicant/Owner: VDOT			_		State:	VA :	Sampling Point: WL-12, 13
Investigator(s): David Kwasneiv	wski and Glenr	n Wilson	Section, Town	ship, Range:			'
Landform (hillslope, terrace, etc.):	floodplain		Local relief (co	ncave, convex,	none): r	none	Slope (%): 0-1%
Subregion (LRR or MLRA): LRR	Т	Lat: 3	6° 45' 35.59"	Long:	76° 19' 49.	38"	Datum: WGS 84
Soil Map Unit Name: Nawney silt	loam				'	NWI classificatio	on: E2EM1P
Are climatic / hydrologic conditions of	on the site typical	for this time of year?	Yes	X No	(I	If no, explain in R	temarks.)
Are Vegetation ,Soil	or Hydrology	significantly dis	turbed?	Are "No	ormal Circumsta	ances" present?	Yes X No
Are Vegetation ,Soil	or Hydrology	naturally proble				wers in Remarks	
<u> </u>	_						,
SUMMARY OF FINDINGS-A	ttach site ma	p showing samplin	g point locat	ions, transe	cts, importa	ant features, e	etc.
Hydrophytic Vegetation Present?	Yes X	No		,	· ·	,	
Hydric Soil Present?	Yes X	No No		Is the Sampled	d Area		
Wetland Hydrology Present?	Yes X	No No	_	Within a Wetla		Yes X	No
,		<u>-</u>					
Remarks: Tidal E2EM5 Wetland (PI			-4!! 4	\			ļ
Wetland lat and long were taken app This wetland is located to the north			ot son bore locat	ion)			
This wettaria is located to the Horar v	51 1 04 Within tidal	Waters					
HYDROLOGY							
Wetland Hydrology Indicators:					Secondary Inc	dicators (minimur	m of two required)
Primary Indicators (minimum of one	is required; check	call that apply)			Surface	Soil Cracks (B6))
Surface Water (A1)		Aquatic Fauna (B13)			Sparsel	y Vegetated Con-	cave Surface (B8)
X High Water Table (A2)		Marl Deposits (B15) (L	.RR U)		X Drainag	je Patterns (B10)	ļ
X Saturation (A3)		Hydrogen Sulfide Odor	(C1)		Moss T	rim Lines (B16)	ļ.
Water Marks (B1)		Oxidized Rhizospheres	on Living Roots	(C3)	Dry-Sea	ason Water Table	; (C2)
Sediment Deposits (B2)		Presence of Reduced	ron (C4)		Crayfish	n Burrows (C8)	ļ.
Drift Deposits (B3)		Recent Reduction in Ti	lled Soils (C6)		Saturati	ion Visible on Aer	rial Imagery (C9)
Algal Mat or Crust (B4)		Thin Muck Surface (C7	')		Geomorphic Position (D2)		
Iron Deposits (B5)		Other (Explain in Rema	arks)		Shallow	Aquitard (D3)	
Inundation Visible on Aerial Im	nagery (B7)				X FAC-Ne	eutral Test (D5)	ļ.
X Water-Stained Leaves (B9)					Sphagn	ium moss (D8) (L	₋RR T, U)
Field Observations:	٧						
Surface Water Present? Yes	No _X	_ ' ' '	-	-			ļ.
Water Table Present? Yes	X No	_ Depth (inches):	-	3"			
Saturation Present? Yes	X_ No	_ Depth (inches):		3" We	etland Hydrolog	gy Present?	Yes X No
(includes capillary fringe)							
Describe Recorded Data (stream ga	uge, monitoring v	vell, aerial photos, previo	us inspections),	f available:			
Remarks:							ļ.
							ļ.
							ļ.
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Project/Site:		I-64 /High Rise Bridg	ge Corridor St	iudy	
•			y -		Sampling date: 2/6/2014
Veretation (Four St	4a\ II	aa aalantifia namas	of plants		Sampling point: WL-12, 13
vegetation (Four Sti	rata) - Us	se scientific names of Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot si	izes: ft)		Species?	Status	Number of Dominant species
1					That are OBL, FACW, or FAC:(A)
2.		-			Total number of Dominant
Z					Species across All Strata: 1 (B)
3.					
					Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)
4					That are OBL, FACW, or FAC: 100% (A/B)
Total Cover:	0	50% of total cover	0%		
0 11 /01 1 04 4	(6)	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratu 1.	ım (ft)	_			Total % Cover of Multiply by: OBL species x 1 =
-		-			FACW species x 2 =
2.					FAC species x 3 =
		-			FACU species x 4 =
3.		-			UPL species x 5 = (A) (B)
4.					Prevalence Index = B/A =
5					Hydrophytic Vegetation Indicators:
Total Cover:	0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
	ŭ	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()					3 - Prevalence Index is ≤3.0¹
1. Phragmites austr	ralis	95	Υ	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Common reed					and Remarks or on a separate sheet)
2		-			Problematic Hydrophytic Vegetation¹ (Explain)
3.					
4		<u> </u>			Indicators of hydric soil and wetland hydrology must be present
5.					Definitions of Four Vegetation Strata:
					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
Total Cover:	95	50% of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than
Total Cover:	95	20% of total cover	19%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum	()				
1					Herb - All herbaceous (non-woody) plants, regardless of size,
2.		_			and woody plants less than 3.28 ft tall.
<u> </u>		-			Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
4		<u> </u>			Undrankatia
4					Hydrophytic Vegetation
Total Cover:	0	50% of total cover	0%		Present? Yes X No
		20% of total cover	0%		
Remarks: (Include pl	hoto num	nbers here or on a sep	parate sheet.))	Herb (5-ft radius)
			Trees and	Vines	
			(30-ft rad	dius)	
			Sapling/Shr	ruh	
			(15-ft radiu		
			(

Designation of the Control of the Co	dalam Otronio
Project/Site: I-64 /High Rise Bridge Corri	idor Study

Sampling date: 2/6/2014
Sampling point: WL-12, 13

0011			. 14. 1				C. P. C. C.			
	cription: (Describe to the	aeptn neea	ea to aocument tr			ne absence c	of indicators.)			
Depth	Matrix	0/	0.1.7.10	Redox Fe			.	Б		
(inches)	Color (moist)	400	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks		
0-6 6-10	10YR 3/3 10YR 7/1	90	10YR 5/6	10			silt loam	root mat		
10-16+	10YR 6/1	100	10113/6	10			sand			
10-10+	10110/1	100					sand			
¹Type: C=Co	oncentration, D=Depletion,	RM=Reduce	ed Matrix MS=Mas	ked Sand G	rains		² Location: PL=Pore	e Lining M=Matrix		
	Indicators: (Applicable t		· · · · · · · · · · · · · · · · · · ·			Indicators	for Problematic Hydr	* ·		
Histoso					e (S8) (LRR		1cm Muck (A9) (L			
_	Epipedon (A2)				(LRR S, T, U	_	2cm Muck (A10) (•		
	Histic (A3)				F1) (LRR O)	′ -		18) (outside MLRA 150A,B)		
_	gen Sulfide (A4)		Loamy Gley			_	 -	in Soils (F19) (LRR P, S, T)		
_ ' '	d Layers (A5)		Depleted M		_,	_	Anomalous Bright			
_	c Bodies (A6) (LRR P, T,	U)		Surface(F6	<i>i</i>)	_	(MLRA 153B)			
	Mucky Mineral (A7) (LRR F	-	Depleted Da				Red Parent Materia	al (TF2)		
	Presence (A8) (LRR U)	, , -,	Redox Depi			_		Surface (TF12) (LRR T, U)		
	uck (A9) (LRR P, T)		Marl (F10) (,	,	_	Other (Explain in R	, ,, , ,		
	ed Below Dark Surface (A	11)		•	(MLRA 151)	_	_ ` '	,		
	Dark Surface (A12)	,		, ,	ses (F12) (LRR O, P, T) 3Indicators of hydrophytic vegetation and					
_	al Prairie Redox (A16) (ML	.RA 150A)			LRR P, T, U)					
	Mucky Mineral (S1) (LRR	-	Delta Ochri	c (F17) (ML	.RA 151)	unless disturbed or problematic				
Sandy	Gleyed Matrix (S4)		Reduced Ve	ertic (F18) (MLRA 150A,	150B)				
	Redox (S5)		Piedmont F	loodplain Sc	oils (F19) (ML	RA 149A)				
Strippe	ed Matrix (S6)		Anomalous	Bright Loan	ny Soils (F20)	(MLRA 149A	A, 153C, 153D)			
Dark S	Surface (S7) (LRR P, S, T,	U)								
Restrictive	Layer (if observed):									
Type:										
Depth (i	nches):					Hydric Soil	Is Present? Y	ES <u>X</u> No		
Remarks: n	o odor observed, organic	streaking wa	s observed from 6"	+						

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic Data Form- Atlantic Data Form- Data Form-

Project/Site: 1-64 /High Rise Bridge Corridor S	tudy City/County: L	oity of Chesa		Sampling Date: <u>2/7/2014</u>		
Applicant/Owner: VDOT			State: VA	Sampling Point: WL-14, 15		
Investigator(s): David Kwasneiwski and Glenr	n Wilson Section, Town	ship, Range:				
Landform (hillslope, terrace, etc.): floodplain	Local relief (co	oncave, convex,	none): none	Slope (%): <u>0-1%</u>		
Subregion (LRR or MLRA): LRR T	Lat: 36° 45' 31.57"	Long:	76° 19' 45.67"	Datum: WGS 84		
Soil Map Unit Name: Munden-Urban land comp	lex and Water		NWI classificati	ion: E2EM1P		
Are climatic / hydrologic conditions on the site typical	for this time of year? Yes	X No	(If no, explain in I	Remarks.)		
Are Vegetation ,Soil ,or Hydrology	significantly disturbed?	Are "No	_ ormal Circumstances" present?	? Yes X No		
Are Vegetation ,Soil ,or Hydrology	naturally problematic?	(If needed,	explain any answers in Remark	(s.)		
						
SUMMARY OF FINDINGS-Attach site map	showing sampling point locat	ions, transe	cts, important features,	etc.		
Hydrophytic Vegetation Present? Yes X	No	·				
Hydric Soil Present? Yes X		Is the Sampled	d Area			
Wetland Hydrology Present? Yes X		Within a Wetla		No		
Remarks: Tidal E2EM Wetland						
Wetland lat and long were taken approximately in the This wetland is located to the south of I-64 within tidal	•	ion)				
This wettand is located to the south of 1-64 within tidal	waters					
HYDROLOGY						
Wetland Hydrology Indicators:			Secondary Indicators (minimu	um of two required)		
Primary Indicators (minimum of one is required; check	call that apply)		Surface Soil Cracks (B6	6)		
Surface Water (A1)	Aquatic Fauna (B13)		Sparsely Vegetated Cor	ncave Surface (B8)		
X High Water Table (A2)	Marl Deposits (B15) (LRR U)		X Drainage Patterns (B10			
X Saturation (A3) X	Hydrogen Sulfide Odor (C1)		Moss Trim Lines (B16)			
Water Marks (B1)	Oxidized Rhizospheres on Living Roots	(C3)	Dry-Season Water Table (C2)			
Sediment Deposits (B2)	Presence of Reduced Iron (C4)	,	Crayfish Burrows (C8)	,		
X Drift Deposits (B3)	Recent Reduction in Tilled Soils (C6)		Saturation Visible on Ae	erial Imagery (C9)		
Algal Mat or Crust (B4)	Thin Muck Surface (C7)		X Geomorphic Position (D2)			
Iron Deposits (B5)	Other (Explain in Remarks)		Shallow Aquitard (D3)	72)		
Inundation Visible on Aerial Imagery (B7)	Curor (Explain in Romano)		X FAC-Neutral Test (D5)			
X Water-Stained Leaves (B9)			Sphagnum moss (D8)	(IRRT II)		
Water Stained Leaves (B5)			Opinagram mode (20)	(2 1, 3)		
Field Observations:						
Surface Water Present? Yes No _X	Depth (inches):					
Water Table Present? Yes X No	Depth (inches):	0"				
Saturation Present? Yes X No	Depth (inches):	0" We	etland Hydrology Present?	Yes X No		
(includes capillary fringe)						
Describe Recorded Data (stream gauge, monitoring w	ell, aerial photos, previous inspections),	if available:				
Remarks:						

Project/Site:	I-64 /High Rise Bridg	ge Corridor St	udy	
,	<u> </u>	,	<u></u>	Sampling date: <u>2/7/2014</u>
V				Sampling point: WL-14, 15
Vegetation (Four Strata) - Us	Absolute	of plants. Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)		Species?	Status	Number of Dominant species
1		<u> </u>		That are OBL, FACW, or FAC: 2 (A)
_				
2.	<u> </u>			Total number of Dominant
3.				Species across All Strata: 2 (B)
				Percent of Dominant Species
4.				That are OBL, FACW, or FAC: 100% (A/B)
T				
Total Cover: 0	50% of total cover 20% of total cover	0% 0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)	20 /0 Of total cover	070		Total % Cover of Multiply by:
1.				OBL speciesx 1 =
				FACW speciesx 2 =
2	· ——			FAC species x 3 = FACU species x 4 =
3.				UPL species x 5 =
				Column Totals: (A) (B)
4.				Prevalence Index = B/A =
5	<u> </u>			
J	<u> </u>			Hydrophytic Vegetation Indicators:
Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0¹
Spartina alterniflora Saltwater Cord Grass	70	Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data and Remarks or on a separate sheet)
2. Phragmites australis	20		FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
Common reed			17.011	1 100 ioniano riyaropriyno vogotanom (Explain)
Spartina cynosuroides	5	N	OBL	
Big Cord Grass	<u> </u>			Indicators of hydric call and watland hydrology much
4	<u> </u>			¹Indicators of hydric soil and wetland hydrology must be present
5.	<u> </u>			Definitions of Four Vegetation Strata:
				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
Total Cover: 95	50% of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than
Total Cover. 33	20% of total cover	19%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
1				Herb - All herbaceous (non-woody) plants, regardless of size,
2.				and woody plants less than 3.28 ft tall.
2.				Woody Vine - All woody vines greater than 3.28 ft in height.
3.				
				Harland at
4	<u> </u>			Hydrophytic Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
	20% of total cover	0%		
Remarks: (Include photo num	bers here or on a se	parate sheet.)	'	Herb (5-ft radius)
		Trees and	Vines	Tierb (5 retailed)
		(30-ft rad		
	Γ	0 1: /5:		
		Sapling/Shr (15-ft radiu		
		(±3-it lault	13)	

Sampling date: 2/7/2014
Sampling point: WL-14, 15

Soil										
Profile Des	cription: (Describe to the	depth need	ed to document tl	he indicator	or confirm th	e absence of	f indicators.)			
Depth	Matrix			Redox Fea	atures					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks		
0-6	10YR 3/1	100					fine sandy loam	many roots, root mat		
6-9	10YR 4/1	100					fine sandy loam			
9-16+	10YR 5/1	100					sand	fine		
0 101	10111 0/1	100					dana	11110		
1Turney C. Co	oncentration, D=Depletion,	DM. Dadues	al Matrix MC Mas	Irad Cand Cr			² Location: PL=Pore	Lining M. Matrix		
	, ,		,		airis.	la dia ataun 1		0,		
	Indicators: (Applicable t	o ali LKKS,		•	- (CO) (LDD C		for Problematic Hydri			
Histoso	` '				e (S8) (LRR S	_	1cm Muck (A9) (LF	•		
	Epipedon (A2)				(LRR S, T, U)	_	_ 2cm Muck (A10) (L	·		
	Histic (A3)			ky Mineral (F		_		8) (outside MLRA 150A,B)		
X Hydrog	gen Sulfide (A4)		Loamy Gley	yed Matrix (F	2)	_	Piedmont Floodplai	n Soils (F19) (LRR P, S, T)		
Statifie	ed Layers (A5)		X Depleted M	latrix (F3)		_	Anomalous Bright L	oamy Soils (F20)		
Organi	ic Bodies (A6) (LRR P, T,	U)	Redox Dark	c Surface(F6))		(MLRA 153B)			
5 cm N	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface ((F7)	_	Red Parent Materia	I (TF2)		
Muck F	Presence (A8) (LRR U)		Redox Dep	ressions (F8))	_	Very Shallow Dark S	Surface (TF12) (LRR T, U)		
1cm M	luck (A9) (LRR P, T)		Marl (F10) ((LRR U)			Other (Explain in Re	emarks)		
Deplet	ed Below Dark Surface (A1	11)	Depleted O	chric (F11) (MLRA 151)					
Thick [Dark Surface (A12)		Iron-Manga	nese Masses	s (F12) (LRR (O, P, T)	³ Indicators of hydrophytic vegetation and			
Coasta	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present,							
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochric (F17) (MLRA 151) unless disturbed or problematic							
Sandy	Gleyed Matrix (S4)		Reduced V	Reduced Vertic (F18) (MLRA 150A, 150B)						
Sandy	Redox (S5)		Piedmont F	loodplain So	ils (F19) (MLF	RA 149A)				
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)			
Dark S	Surface (S7) (LRR P, S, T,	U)								
Restrictive	Layer (if observed):									
Type:										
Depth (i	nches):				Hydric Soils Present? YES X No					
						,				
Remarks:										

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic Data Form- Atlantic Data Form- Data Form-

Project/Site: 1-64 /High Rise Bridge Corridor	Study City/County:	City of Chesa		Sampling Date: <u>2/6/2014</u>
Applicant/Owner: VDOT			State: VA	Sampling Point: WL-16, 17, 18
Investigator(s): David Kwasneiwski and Gler	nn Wilson Section, Tov	wnship, Range:		
Landform (hillslope, terrace, etc.): floodplain	Local relief ((concave, convex,	none): none	Slope (%): <u>0-1%</u>
Subregion (LRR or MLRA): LRR T	Lat: <u>36° 45' 35.61</u>	1" Long:	76° 19' 40.05"	Datum: WGS 84
Soil Map Unit Name: Munden-Urban land com	plex and Water		NWI classificat	tion: E1UBLx
Are climatic / hydrologic conditions on the site typical	al for this time of year?	es X No	(If no, explain in	Remarks.)
Are Vegetation ,Soil ,or Hydrology	significantly disturbed?	Are "No	_ ormal Circumstances" present	? Yes X No
Are Vegetation ,Soil ,or Hydrology	naturally problematic?	(If needed,	explain any answers in Remarl	ks.)
<u> </u>				
SUMMARY OF FINDINGS-Attach site ma	ap showing sampling point loc	ations, transe	cts, important features.	, etc.
Hydrophytic Vegetation Present? Yes X		1		
Hydric Soil Present? Yes X		Is the Sampled	d Area	
Wetland Hydrology Present? Yes X		Within a Wetla		No
	<u> </u>			
Remarks: Tidal E2EM5 Wetland (Phragmites austra				
Wetland lat and long were taken approximately in the This wetland is located to the north of I-64 within tidates.		ation)		
This wettand is located to the north of 1-04 within tide	ai waters			
HYDROLOGY				
Wetland Hydrology Indicators:			Secondary Indicators (minim	um of two required)
Primary Indicators (minimum of one is required; che	ck all that apply)		Surface Soil Cracks (B	6)
Surface Water (A1)	Aquatic Fauna (B13)		Sparsely Vegetated Co	oncave Surface (B8)
X High Water Table (A2)	Marl Deposits (B15) (LRR U)		X Drainage Patterns (B10	
X Saturation (A3)	Hydrogen Sulfide Odor (C1)		Moss Trim Lines (B16)	,
Water Marks (B1)	Oxidized Rhizospheres on Living Roo	ots (C3)	Dry-Season Water Tab	
Sediment Deposits (B2)	Presence of Reduced Iron (C4)	, ,	Crayfish Burrows (C8)	
X Drift Deposits (B3)	Recent Reduction in Tilled Soils (C6)		Saturation Visible on A	
Algal Mat or Crust (B4)	Thin Muck Surface (C7)		X Geomorphic Position (I	• • • •
Iron Deposits (B5)	Other (Explain in Remarks)		Shallow Aquitard (D3)	32)
Inundation Visible on Aerial Imagery (B7)			X FAC-Neutral Test (D5)	
X Water-Stained Leaves (B9)			Sphagnum moss (D8)	
valer stanied Ecaves (B5)			Opinagnam mood (20)	(2
Field Observations:				
Surface Water Present? Yes No>	X Depth (inches):	-		
Water Table Present? Yes X No	Depth (inches):	3"		
Saturation Present? Yes X No	Depth (inches):	3" We	etland Hydrology Present?	Yes X No
(includes capillary fringe)				
Describe Recorded Data (stream gauge, monitoring	well, aerial photos, previous inspections), if available:		
Remarks:				

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
,	<u> </u>	y -	-	Sampling date: 2/6/2014
V				Sampling point: WL-16, 17, 18
Vegetation (Four Strata) - I			Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: f	Absolute t) % Cover	Dominant Species?	Indicator Status	Number of Dominant species
1.	i) % Cover	Species:	Status	That are OBL, FACW, or FAC: 3 (A)
				(//
2.	_			Total number of Dominant
				Species across All Strata:3(B)
3.	_			
				Percent of Dominant Species
4				That are OBL, FACW, or FAC: 100% (A/B)
Total Cover: 0	50% of total cover	0%		
Total Cover.	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)	2070 01 10101 00101	070		Total % Cover of Multiply by:
Baccharis halimifolia		Y	FAC	OBL species x 1 =
Groundseltree				FACW species x 2 =
2.				FAC species x 3 =
				FACU species x 4 =
3				UPL species x 5 =
				Column Totals: (A) (B)
4				Prevalence Index = B/A =
5				
				Hydrophytic Vegetation Indicators:
Total Cover: 2	50% of total cover	1%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
 Phragmites australis 	70	Υ	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Common reed				and Remarks or on a separate sheet)
Spartina cynosuroides	30	<u> </u>	OBL	Problematic Hydrophytic Vegetation¹ (Explain)
Big Cord Grass 3.	_			
	-			
4.				¹ Indicators of hydric soil and wetland hydrology must
				be present
5.				Definitions of Four Vegetation Strata:
				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
Tetal Carrent 400	500/ of total access	F00/		Canling (Church - Woods, plants, evaluating vince loss than
Total Cover: 100	50% of total cover 20% of total cover	50% 20%		Sapling /Shrub - Woody plants, excluding vines, less than 3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()	20 % Of total cover	20 %		Sin. DBH and greater than 3.26 it (1111) tall.
1.	_			Herb - All herbaceous (non-woody) plants, regardless of size,
				and woody plants less than 3.28 ft tall.
2.				
				Woody Vine - All woody vines greater than 3.28 ft in height.
3				
				Hardwark of a
4				Hydrophytic Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
rotar Govor.	20% of total cover	0%		100 K.
Remarks: (Include photo nu				
			\ \(\text{C} \)	Herb (5-ft radius)
		Trees and		
		(30-ft rad	aius)	
	[Cordinate	b	
		Sapling/Shr		
		(15-ft radiu	15)	

Project/Site: I-64 /High Rise Bridge Corridor Study				
	Project/Site:	I-64 /High Rise	Bridge Corridor Study	

Sampling date: 2/6/2014
Sampling point: WL-16, 17, 18

Soil								
Profile Des	scription: (Describe to the	depth need	led to document t	he indicator	or confirm th	e absence o	f indicators.)	
Depth	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-3	10YR 3/2	100					loam	
3-10	10YR 4/1	100					sandy loam	-
10-16+	10YR 5/1	100					loamy sand	-
10-10+	10110 3/1	100					loanly sand	
			·					
								-
1T 0 0				- 10 10				
	oncentration, D=Depletion,		·		ains.		² Location: PL=Pore Lin	
1 -	I Indicators: (Applicable t	o all LRRS,		•	(00) (100		for Problematic Hydric S	
_	sol (A1)				e (S8) (LRR S	_	1cm Muck (A9) (LRR	•
	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10) (LRF	•
	Histic (A3)			ky Mineral (F		_		(outside MLRA 150A,B)
Hydro	gen Sulfide (A4)		Loamy Gle	yed Matrix (F	2)	_	Piedmont Floodplain S	Soils (F19) (LRR P, S, T)
Statific	ed Layers (A5)		X Depleted M	latrix (F3)		_	Anomalous Bright Loa	my Soils (F20)
Organ	ic Bodies (A6) (LRR P, T,	U)	Redox Darl	k Surface(F6))		(MLRA 153B)	
5 cm I	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface ((F7)		Red Parent Material (1	F2)
Muck	Presence (A8) (LRR U)		Redox Dep	ressions (F8))	_	Very Shallow Dark Sur	face (TF12) (LRR T, U)
1cm N	Muck (A9) (LRR P, T)		Marl (F10)	(LRR U)		_	Other (Explain in Rem	arks)
Deple	ted Below Dark Surface (A	11)	Depleted O	chric (F11) (MLRA 151)			
Thick	Dark Surface (A12)		Iron-Manga	nese Masses	s (F12) (LRR (O, P, T)	3Indicators of hydrophy	tic vegetation and
Coast	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Sur	face (F13) (I	LRR P, T, U)		wetland hydrology mus	st be present,
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (ML	RA 151)		unless disturbed or pro	oblematic
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18) (I	MLRA 150A, 1	150B)		
Sandy	Redox (S5)		Piedmont F	loodplain So	ils (F19) (MLI	RA 149A)		
Stripp	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)		•		•	•	
	Layer (if observed):							
Type:	.,. (,							
- 7/- 41								
Denth (inches):					Hydric Soil	s Present? YFS	X No
Ворин	11101100).					nyano con	511000iii. 120	<u>~</u>
Remarks:	no odor observed				<u>I</u>			
T to manto	no odor observed							

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/6/2014 Applicant/Owner: VDOT Sampling Point: WL-19 State: VA Investigator(s): David Kwasniewski and Glenn Wilson Section, Township, Range: 0-1% Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): none Slope (%): Long: 76° 19' 37.83" WGS 84 Subregion (LRR or MLRA): LRR T Lat: 36° 45' 35.97" Datum: Soil Map Unit Name: Munden-Urban land complex N/A NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) ,Soil or Hydrology, significantly disturbed? Are "Normal Circumstances" present? Yes naturally problematic? (If needed, explain any answers in Remarks.) or Hydrology SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes X Wetland Hydrology Present? No Within a Wetland? Yes Remarks: PEM5 Wetland adjacent to roadside ditch (Phragmites australis dominant) Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) Wetland is located north of I-64 with a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Depth (inches): Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Data recorded in February, with over 0.5" of precip in the previous week.

Project/Site:	I-6	64 /High Rise Brid	ge Corridor S	tudy	
		-			Sampling date: <u>2/6/2014</u>
					Sampling point: WL-19
Vegetation (Four Str	ata) - Use				
T Otra (/Dist si	(t)	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot siz	zes: π)	% Cover	Species?	Status	Number of Dominant species That are OBL, FACW, or FAC: 2 (A)
1.					That are OBL, I ACW, OF I AC(A)
2.					Total number of Dominant
	,	-			Species across All Strata: 2 (B)
3.					<u></u> ``,
					Percent of Dominant Species
4			. 		That are OBL, FACW, or FAC: 100% (A/B)
					
Total Cover:		% of total cover % of total cover	0% 0%		Prevalence Index worksheet:
Sapling /Shrub Stratu		1/6 OI lotal cover	0 /0		Total % Cover of Multiply by:
1.	iii (it)				OBL species x 1 =
		-			FACW species x 2 =
2.					FAC species x 3 =
					FACU species x 4 =
3					UPL species x 5 =
					Column Totals: (A) (B)
4			· 		Prevalence Index = B/A =
5					
					Hydrophytic Vegetation Indicators:
Total Cover:	0 50	% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
	20	% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()					3 - Prevalence Index is ≤3.0 ¹
 Phragmites austra 	alis	90	Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
common reed					and Remarks or on a separate sheet)
2					Problematic Hydrophytic Vegetation¹ (Explain)
3.					
ა					
4.					¹ Indicators of hydric soil and wetland hydrology must
					be present
5			. <u> </u>		Definitions of Four Vegetation Strata:
			. 		Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6		-			diameter at breast height (DBH), regardless of height.
Total Cover:	90 50	% of total cover	45%		Sapling /Shrub - Woody plants, excluding vines, less than
rotal Gover.		% of total cover	18%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum	()				
1. Lonicera japonica		30	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
Japanese honeys					and woody plants less than 3.28 ft tall.
2. Smilax rotundifoli	a	5	N	FAC	Was by Vine Allowed or has prosted the a 0.00 ft in height
greenbriar 3.		-	· -		Woody Vine - All woody vines greater than 3.28 ft in height.
J					
4.					Hydrophytic
					Vegetation
Total Cover:	35 50	% of total cover	18%		Present? Yes X No
		% of total cover	7%		
Remarks: (Include ph	oto numbe	ers here or on a s	eparate sheet	.)	Herb (5-ft radius)
			Trees and	Vines	Tiero (5 Terudius)
			(30-ft ra		
			(00.11.0	a,	
		-			
			Sapling/Shr	rub	
			(15-ft radiu		
		l			

Proje	ct/Site	I-64 /High	Rise Bridge	Corridor	Study
TOIL	UV SILE.	1-04 /1 liqi	rise blidge	Comidor	Study

Sampling date: 2/6/2014
Sampling point: WL-19

Soil								
Profile Des	cription: (Describe to the	depth need	ed to document tl	ne indicator	or confirm th	e absence o	f indicators.)	
Depth	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-3	10YR 3/1	100					fine sandy loam	wet
3-10	10YR 3/1	100					sandy loam	wet
10-16+	10YR 3/2	100					sandy loam	wet
10 101	10111 0/2	100					danay loani	WO.
1T 0 0	oncentration, D=Depletion,	DM Dadies	- M-tric MC M		-1		31	Links A Matrix
- ''			,		ams.		² Location: PL=Pore	<u> </u>
1 -	Indicators: (Applicable t	o all LRRS,		•	(00) (100 6		for Problematic Hydri	
	ol (A1)				(S8) (LRR S	_	_ 1cm Muck (A9) (L I	•
	Epipedon (A2)				(LRR S, T, U)	_	_ 2cm Muck (A10) (I	
	Histic (A3)			ky Mineral (F				8) (outside MLRA 150A,B)
Hydro	gen Sulfide (A4)		Loamy Gley	ed Matrix (F2	2)	_	Piedmont Floodpla	in Soils (F19) (LRR P, S, T)
Statifie	ed Layers (A5)		X Depleted M	atrix (F3)			Anomalous Bright I	_oamy Soils (F20)
Organ	ic Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6)			(MLRA 153B)	
5 cm N	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface (F7)	_	_ Red Parent Materia	al (TF2)
Muck	Presence (A8) (LRR U)		Redox Dep	ressions (F8)			Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm M	Muck (A9) (LRR P, T)		Marl (F10) (LRR U)			Other (Explain in R	emarks)
Deplet	ted Below Dark Surface (A1	11)	Depleted O	chric (F11) (MLRA 151)			
Thick	Dark Surface (A12)		Iron-Manga	nese Masses	(F12) (LRR (O, P, T)	3Indicators of hydro	phytic vegetation and
Coasta	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Sur	face (F13) (L	RR P, T, U)		wetland hydrology i	must be present,
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (MLF	RA 151)		unless disturbed or	problematic
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18) (N	MLRA 150A, 1	50B)		
Sandy	Redox (S5)		Piedmont F	loodplain Soi	ils (F19) (MLF	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)			. ,	•		
	Layer (if observed):							
Type:	.,. (,							
<u></u>								
Depth (inches).					Hydric Soils	s Present? Yi	ES X No
						,		<u> </u>
Remarks:	no odors observed							
	potential fill material obse	arvad						
	redox concentrations like		wet soils with pote	ential fill mate	erials			
	TO GOT CONTOUND THE	.,aooa 2	, pos	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic and Gulf Coastal Plain Region Determination Data Form- Atlantic Data Form- Atlantic Data Form- Data Form-

Project/Site: I-64 /HIGH RISE Br	lage Corridor Stud	<u>y</u>	City/County: C	ty of Chesa	реаке		Samplin	g Date: 2	2/6/2014
Applicant/Owner: VDOT					S	tate: VA	Samplin	g Point: N	NL-20
Investigator(s): David Kwasnei	wski and Glenn W	ilson	Section, Townsh	nip, Range:					
Landform (hillslope, terrace, etc.):	flat		Local relief (con	cave, convex,	none):	none	Slope	(%): (0-1%
Subregion (LRR or MLRA): LRR	<u>T</u>	Lat: <u>36</u>	° 45' 33.18"	Long:	76° 19	9'15.18"	Dat	tum: \(\frac{1}{2}\)	WGS 84
Soil Map Unit Name: Udorthents	-Urban land compl	ex				NWI class	ification: N/	Α	
Are climatic / hydrologic conditions	on the site typical for the	nis time of year?	Yes	X No	_	(If no, expla	in in Remarks	.)	
Are Vegetation ,Soil	or Hydrology	significantly distu	rbed?	Are "No	ormal Circ	cumstances" pre	sent? Yes	Χı	No
Are Vegetation ,Soil	or Hydrology	naturally problem	atic?	(If needed, e	explain a	ny answers in Re	marks.)		
	<u> </u>	<u> </u>							
SUMMARY OF FINDINGS-A	Attach site map sl	nowing sampling	point location	ns, transe	cts, im	portant featu	res, etc.		
Hydrophytic Vegetation Present?	Yes X	No					·		
Hydric Soil Present?	Yes X	No	ls	the Sampled	l Area				
Wetland Hydrology Present?	Yes X	No		/ithin a Wetlar		Yes	X No		
, .,			_						
Remarks: PFO Wetland				,					
Wetland lat and long were taken ap This wetland is located to the south			soil bore locatio	n)					
This wettand is located to the south	oi i-64 williout a tiuai	muence							
HYDROLOGY									
Wetland Hydrology Indicators:					Second	lary Indicators (m	inimum of two	required)	
Primary Indicators (minimum of one	e is required; check all	that apply)			S	urface Soil Crack	(s (B6)		
X Surface Water (A1)	Ac	juatic Fauna (B13)			s	parsely Vegetate	d Concave Su	rface (B8))
X High Water Table (A2)	Ma	arl Deposits (B15) (LR	R U)		X D	rainage Patterns	(B10)		
X Saturation (A3)		drogen Sulfide Odor (-			loss Trim Lines (I			
X Water Marks (B1)		kidized Rhizospheres o		C3)		ry-Season Water			
Sediment Deposits (B2)		esence of Reduced Iro		,	_	rayfish Burrows (` '		
Drift Deposits (B3)		ecent Reduction in Tille	,			aturation Visible		erv (C9)	
Algal Mat or Crust (B4)		in Muck Surface (C7)	()		_	eomorphic Positi	-	, (,	
Iron Deposits (B5)		her (Explain in Remark	ks)			hallow Aquitard (
Inundation Visible on Aerial In		ioi (Explain in Roman	NO)			AC-Neutral Test			
X Water-Stained Leaves (B9)	nagery (D7)				_	phagnum moss (` ,	IN.	
Water-Stained Leaves (B9)					_ `	priagriam moss (Do) (LIKIK 1, C	<i>'</i>	
Field Observations:									
Surface Water Present? Yes	X No	Depth (inches):	()"					
Water Table Present? Yes	X No	Depth (inches):	()"					
Saturation Present? Yes	X No	Depth (inches):)" We	tland Hy	drology Present	? Yes	Χı	No
(includes capillary fringe)									_
Describe Recorded Data (stream ga	auge, monitoring well,	aerial photos, previous	s inspections), if	available:					
Remarks: Water is at soil surface									

Project/Site:		ge Corridor St	udy	
		,		Sampling date: 2/6/2014
				Sampling point: WL-20
Vegetation (Four Strata) - U	se scientific names	of plants.		31 31 3
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1. Acer rubrum	50	Y	FAC	That are OBL, FACW, or FAC: 2 (A)
Red maple				
Liquidambar styraciflua	15	N	FAC	Total number of Dominant
Sweet-Gum	- 10		1710	Species across All Strata: 2 (B)
3. Pinus taeda	15	N	FAC	(B)
Loblolly Pine	<u> </u>		1710	Percent of Dominant Species
4.				That are OBL, FACW, or FAC: 100% (A/B)
4.	- —			That are OBL, FACW, or FAC. 100% (AVB)
Total Cover: 80	50% of total cover	400/		
Total Cover: 80		40%		Dravelance Index weeks to
0	20% of total cover	16%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)	<u> </u>			Total % Cover of Multiply by:
1				OBL species x 1 =
				FACW species x 2 =
2				FAC species x 3 =
				FACU species x 4 =
3				UPL species x 5 =
				Column Totals: (A) (B)
4				Prevalence Index = B/A =
5	<u> </u>			
	<u> </u>			Hydrophytic Vegetation Indicators:
Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
	70	Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Arundinaria gigantea		<u> </u>	FACVV	
Giant cane				and Remarks or on a separate sheet)
2				Problematic Hydrophytic Vegetation¹ (Explain)
3				
4.	<u> </u>			¹ Indicators of hydric soil and wetland hydrology must
	<u> </u>			be present
5.				Definitions of Four Vegetation Strata:
				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.				diameter at breast height (DBH), regardless of height.
<u> </u>				diameter at broadt height (BBH), regardiose of height.
Total Cover: 70	50% of total cover	35%		Sapling /Shrub - Woody plants, excluding vines, less than
Total Cover. 70		35%		
Maria I. Maria Ottata and O	20% of total cover	14%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
1.				Herb - All herbaceous (non-woody) plants, regardless of size,
	- —			
	·			and woody plants less than 3.28 ft tall.
2.	<u> </u>			and woody plants less than 3.28 ft tall.
2.				
				and woody plants less than 3.28 ft tall.
23.				and woody plants less than 3.28 ft tall.
				and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height.
3.				and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic
3. 4.	50% of total cover	0%		and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation
3.	50% of total cover	0%		and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic
3. Total Cover: 0	20% of total cover	0%		and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation
3. 4.	20% of total cover	0%		and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes X No
3. Total Cover: 0	20% of total cover	0% parate sheet.)	Vines	and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation
3. Total Cover: 0	20% of total cover	0% parate sheet.) Trees and		and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes X No
3. Total Cover: 0	20% of total cover	0% parate sheet.)		and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes X No
3. Total Cover: 0	20% of total cover	0% parate sheet.) Trees and		and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes X No
3. Total Cover: 0	20% of total cover	0% parate sheet.) Trees and		and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes X No
3. Total Cover: 0	20% of total cover	0% parate sheet.) Trees and		and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes X No
3. Total Cover: 0	20% of total cover	0% parate sheet.) Trees and	dius)	and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes X No
3. Total Cover: 0	20% of total cover	0% parate sheet.) Trees and (30-ft rac	ub	and woody plants less than 3.28 ft tall. Woody Vine - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes X No

Sampling date: 2/6/2014
Sampling point: WL-20

	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
-3	10YR 3/1	100					fine sandy loam	
8	10YR 5/1	90 95	5YR 5/6	10			fine sand	
	7.5YR 5/1	7.5YR 3/4	5			sandy clay loam		
vne: C=C	oncentration, D=Depletion,	RM=Reduc	ed Matrix MS=Masl	ced Sand Gr	ains		² Location: PL=Pore Linin	n M=Matrix
_	I Indicators: (Applicable t				uiiio.	Indicators	for Problematic Hydric Soi	*
	sol (A1)	·,			e (S8) (LRR S		1cm Muck (A9) (LRR O)	
_	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10) (LRR S	
	Histic (A3)			ky Mineral (F		_	Reduced Vertic (F18) (o	•
_	gen Sulfide (A4)			ed Matrix (F2		_	Piedmont Floodplain Soil	•
	ed Layers (A5)		X Depleted Ma	•	,	_	Anomalous Bright Loamy	
_	ic Bodies (A6) (LRR P, T,	U)		Surface(F6)	ı	_	(MLRA 153B)	, ,
_ ~	Mucky Mineral (A7) (LRR F	•		ark Surface (Red Parent Material (TF2	2)
	Presence (A8) (LRR U)	-	Redox Depr	essions (F8)		_	Very Shallow Dark Surface	ce (TF12) (LRR T, U)
1cm N	Muck (A9) (LRR P, T)		Marl (F10) (LRR U)		_	Other (Explain in Remark	s)
Deple	ted Below Dark Surface (A1	l1)	Depleted O	chric (F11) (MLRA 151)	_		
Thick	Dark Surface (A12)		Iron-Mangai	nese Masses	(F12) (LRR C), P, T)	3Indicators of hydrophytic	vegetation and
Coast	al Prairie Redox (A16) (ML	RA 150A)	Umbric Surf	ace (F13) (I	RR P, T, U)		wetland hydrology must b	e present,
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochrid	(F17) (ML i	RA 151)		unless disturbed or probl	ematic
Sandy	Gleyed Matrix (S4)		Reduced Ve	ertic (F18) (N	MLRA 150A, 1	50B)		
Sandy	Redox (S5)		Piedmont F	oodplain So	ils (F19) (MLF	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	MLRA 149	A, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)						
estrictive	Layer (if observed):							
Type:								
Depth (inches):					Hydric Soi	Is Present? YES 2	(No
marks: r	no odor observed							

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/3/2014 Applicant/Owner: VDOT Sampling Point: WL-21 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Local relief (concave, convex, none): 0-1% none Slope (%): Subregion (LRR or MLRA): LRR T 36° 45' 36.17" Long: 76° 19' 01.53" WGS 84 Lat: Datum: Soil Map Unit Name: Nawney silt loam, Bojac loamy fine sand, Udorthents-Urban land complex, PEM1R NWI classification: Tetotum fine sandy loam Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) ,Soil SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X Hydric Soil Present? Yes Χ No Is the Sampled Area Yes \overline{X} Wetland Hydrology Present? No Within a Wetland? Yes X No Remarks: Tidal E2EM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the north of I-64 within tidal waters **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Sparsely Vegetated Concave Surface (B8) Aquatic Fauna (B13) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Χ Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Χ Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Χ Water-Stained Leaves (B9) Sphagnum moss (D8) (LRR T, U) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

Project/Site:	I-64 /High Rise Brid	ge Corridor Sti	udy	
				Sampling date: 2/3/2014
Vacatation (Four Strate) III	aa aalantifia namaa af	nlanta		Sampling point: WL-21
Vegetation (Four Strata) - U	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)		Species?	Status	Number of Dominant species
1.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<u> </u>		That are OBL, FACW, or FAC: 1 (A)
				, , ,
2.				Total number of Dominant
				Species across All Strata:1 (B)
3				
				Percent of Dominant Species
4				That are OBL, FACW, or FAC: 100% (A/B)
T-t-I O	500/ -f +-+-l	00/		
Total Cover: 0	50% of total cover 20% of total cover	0% 0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)	20% Of total cover	076		Total % Cover of Multiply by:
Jap <u>ing /Jinub Juatum (n)</u> 1.				OBL species x 1 =
·· -				FACW species x 2 =
2.				FAC species x 3 =
				FACU species x 4 =
3.				UPL species x 5 =
				Column Totals:(A)(B)
4.				Prevalence Index = B/A =
5				
				Hydrophytic Vegetation Indicators:
Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
Hards Ottorations ()	20% of total cover	0%		x 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹
Herb Stratum () 1. Spartina alterniflora		Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data
Spartina alterniflora Saltwater Cord Grass		T	OBL	and Remarks or on a separate sheet)
2. Phragmites australis		N	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
Common Reed			TACV	Froblematic Hydrophytic Vegetation (Explain)
3.				
4.				¹ Indicators of hydric soil and wetland hydrology must
				be present
5.				Definitions of Four Vegetation Strata:
				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
Total Cover: 80	50% of total cover	40%		Sapling /Shrub - Woody plants, excluding vines, less than
Mandy Vina Stratum ()	20% of total cover	16%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum () 1.	_			Herb - All herbaceous (non-woody) plants, regardless of size,
1.	<u> </u>			and woody plants less than 3.28 ft tall.
2.				and woody planto loop than 0.20 it tall.
-				Woody Vine - All woody vines greater than 3.28 ft in height.
3.				
4.				Hydrophytic
				Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
Demonstrat /Include whete with	20% of total cover	0%		
Remarks: (Include photo num	nbers here or on a sepa	rate sneet.)		Herb (5-ft radius)
		Trees and V		
		(30-ft radi	ius)	
		Sapling/Shr	ub	
		(15-ft radiu		
		-		

in at/Oitan I CA / Uinto Dina Daiden Comiden Ottodo
Site: I-64 /High Rise Bridge Corridor St

Sampling date: 2/3/2014
Sampling point: WL-21

Soil										
Profile Des	cription: (Describe to the	depth neede	ed to document th	ne indicator	or confirm th	e absence o	f indicators.)			
Depth	Matrix			Redox Fea	atures					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks		
0-5	10YR 3/1	100					silt loam	saturated		
5-12	10YR 4/1	100					fine sandy loam	saturated		
							·			
								-		
1Type: C-C	oncentration, D=Depletion,	PM-Reduce	d Matrix MS-Mac	kad Sand Gr	aine		² Location: PL=Pore	Lining M-Matrix		
	Indicators: (Applicable to				allis.	Indicators	for Problematic Hydri			
_	`	o ali errs, u		•	(CO) /I DD (-			
Histos	` ,				e (S8) (LRR S	_	1cm Muck (A9) (LF	•		
	Epipedon (A2)		Thin Dark Surface (S9) (LRR S, T, U)			_	2cm Muck (A10) (LRR S)			
	Histic (A3)		Loamy Mucky Mineral (F1) (LRR O)			_	Reduced Vertic (F18) (outside MLRA 150A,B)			
	gen Sulfide (A4)		Loamy Gleyed Matrix (F2)			_	Piedmont Floodplain Soils (F19) (LRR P, S, T)			
_	ed Layers (A5)		X Depleted M	. ,		_	Anomalous Bright Loamy Soils (F20)			
	ic Bodies (A6) (LRR P, T, I	=	Redox Dark	Surface(F6)	1		(MLRA 153B)			
5 cm N	Mucky Mineral (A7) (LRR P	', T, U)	Depleted Dark Surface (F7)				Red Parent Material (TF2)			
Muck F	Presence (A8) (LRR U)		Redox Depressions (F8)				Very Shallow Dark Surface (TF12) (LRR T, U)			
1cm M	luck (A9) (LRR P, T)		Marl (F10) (LRR U)		_	Other (Explain in Re	emarks)		
Deplet	ed Below Dark Surface (A1	1)	Depleted O	chric (F11) (MLRA 151)					
Thick I	Dark Surface (A12)		Iron-Manga	phytic vegetation and						
Coasta	al Prairie Redox (A16) (ML	RA 150A)	Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present,							
Sandy Mucky Mineral (S1) (LRR, O, S)			Delta Ochric (F17) (MLRA 151) unless disturbed or problematic							
Sandy Gleyed Matrix (S4)			Reduced Vertic (F18) (MLRA 150A, 150B)							
Sandy	Redox (S5)		Piedmont F	loodplain Soi	ils (F19) (MLI	RA 149A)				
Stripped Matrix (S6)			Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)							
Dark S	Surface (S7) (LRR P, S, T,	U)								
Restrictive	Layer (if observed):									
Type:										
Depth (inches):			Hydric S			Hydric Soils	s Present? YE	S X No		
	,					· ·				
Remarks: M	lany roots down to 8" below	soil surface,	soil was very satu	rated, Redox	features coul	d not be seer	n due to saturation.			
	•		·							

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region

Project/Site: I-64 /High Rise Brid	City/County:	City/County: City of Chesapeake Sampling Date: 2/3/201					
Applicant/Owner: VDOT			State: V	<u>A</u> s	Sampling Point: WL-22,25,26,27		
Investigator(s): Glenn Wilson an	nd David Kwasniewski	Section, Tow	nship, Range:				
• • • • • • • • • • • • • • • • • • • •	tidal floodplain		concave, conve			Slope (%):	0-1%
Subregion (LRR or MLRA): LRR T		_at: 36° 45′ 37.90		ng: <u>76° 18' 47.67</u>	7"	Datum:	WGS 84
Soil Map Unit Name: Rappahanno			an land com	nplex N	WI classification	: <u>E2EM1P</u>	
Are climatic / hydrologic conditions on	the site typical for this time of y	rear? Ye	s <u>X</u> No	(If 1	no, explain in Re	marks.)	
Are Vegetation,Soil,		icantly disturbed?	Are	"Normal Circumstan	ces" present?	Yes X	No
Are Vegetation,Soil,	or Hydrologynatura	ally problematic?	(If neede	d, explain any answe	ers in Remarks.)		
SUMMARY OF FINDINGS-Att	tach site man showing	sampling point loca	itions, trans	sects, importan	t features, e	tc.	
Hydrophytic Vegetation Present?				occio, importan			
Hydric Soil Present?			Is the Samp	led Area			
Wetland Hydrology Present?	Yes X No		Within a We		Yes X	No	

Remarks: Tidal E2EM Wetland (lower Wetland lat and long were taken approached to the north of	oximately in the middle of the w	etland (not soil bore locati	ion)				
LIVEROLOGY							
HYDROLOGY				Casandani India		af tura magnina d	\
Wetland Hydrology Indicators:	o required; about all that apply)			Secondary Indic	•	or two required)
Primary Indicators (minimum of one is X Surface Water (A1)		(P12)			oil Cracks (B6)	ovo Curtoso (Bo) \
X High Water Table (A2)	Aquatic Faun	s (B15) (LRR U)			Vegetated Conca Patterns (B10)	ave Suriace (Do	o)
X Saturation (A3)		Ifide Odor (C1)			n Lines (B16)		
Water Marks (B1)		zospheres on Living Root	e (C3)		on Water Table	(C2)	
Sediment Deposits (B2)		Reduced Iron (C4)	3 (00)		Burrows (C8)	(02)	
Drift Deposits (B3)		ction in Tilled Soils (C6)			` '	al Imageny (CQ)	
Algal Mat or Crust (B4)	Thin Muck St			Saturation Visible on Aerial Imagery (C9) X Geomorphic Position (D2)			
Iron Deposits (B5)		n in Remarks)			quitard (D3)		
X Inundation Visible on Aerial Ima		II III Nemarks)			ral Test (D5)		
X Water-Stained Leaves (B9)	igory (D1)				n moss (D8) (LF	R T. U)	
Trator Starred Edition (20)				Opinaginar		, .,	
Field Observations:							
Surface Water Present? Yes		n (inches):	3"				
Water Table Present? Yes _		(inches):	0"				
Saturation Present? Yes	X No Depth	n (inches):	0"	Wetland Hydrology	Present?	Yes X	No
(includes capillary fringe)							
Describe Recorded Data (stream gauge	ge, monitoring well, aerial photo	s, previous inspections),	if available:				
Remarks:							
iveniars.							

Project/Site:	I-64 /High Rise Bride	ge Corridor St	udy	
		9		Sampling date: 2/3/2014
				Sampling point: WL-22,25,26,27
Vegetation (Four Strata) - Use	e scientific names of	plants.		
, , , , , , , , , , , , , , , , , , , ,	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.				That are OBL, FACW, or FAC: 2 (A)
				(;)
2.	_			Total number of Dominant
2				Species across All Strata:2 (B)
3.				Species across Air Strata.
				Dereant of Deminant Charles
				Percent of Dominant Species
4				That are OBL, FACW, or FAC: 100% (A/B)
				
Total Cover: 0	50% of total cover	0%		
	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
Baccharis halimifolia	3	Y	FAC	OBL species x 1 =
Groundseltree				FACW species x 2 =
2.	<u> </u>			FAC species x 3 =
				FACU species x 4 =
3.				UPL species x 5 =
-	_			Column Totals: (A) (B)
4.				Prevalence Index = B/A =
T				Trevalence mack = B/A =
5				Under white Manatation Indianters
T / 10		00/		Hydrophytic Vegetation Indicators:
Total Cover: 3	50% of total cover	2%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	1%		x 2 - Dominance Test is >50%
Herb Stratum ()	<u> </u>			3 - Prevalence Index is ≤3.0 ¹
1. Spartina patens	80	Υ	FACW	4 - Morphological Adaptations ¹ (Provide supporting data
Salt-Meadow Cord Grass	<u> </u>			and Remarks or on a separate sheet)
2. Aster spp.	10	N	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
				· · · · · · · · · · · · · · · · · · ·
3. Phragmites australis		N	FACW	
Common Reed			17.077	
4. Spartina alterniflora	3		OBL	1Indicators of hydric soil and watland hydrology must
Saltwater Cord Grass	<u> </u>	IN	OBL	Indicators of hydric soil and wetland hydrology must be present
5				Definitions of Four Vegetation Strata:
				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
-	_			
Total Cover: 96	50% of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than 3in.
	20% of total cover	19%		DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
1.				Herb - All herbaceous (non-woody) plants, regardless of size,
•	<u> </u>			and woody plants less than 3.28 ft tall.
2.	_			
-	_			Woody Vine - All woody vines greater than 3.28 ft in height.
3.				, , ,
<u> </u>				
4.				Hydrophytic
<u> </u>				Vegetation
Total Cover: 0	50% of total cover	0%		I
Total Cover.	20% of total cover			Present? Yes X No
Demontos (Inglisto photo pismb		0%		
Remarks: (Include photo numb	ers nere or on a separ	ate sneet.)		Herb (5-ft radius)
				Tierd (5 Terudias)
				\longrightarrow
		Trees and \	/ines	
		Trees and	Villes	
	_			
		Sapling/Shr	rub	
		(15-ft radiu		
		(13-11.1901)	151	

Droi	oct/Sito:	L64 /High	Rise Bridg	o Corridor	Study
PIUI	ect/Site:	1-64 /HIGH	Rise bilaq	e Comaoi	Siddy

SO.	
JUI	

Depth Matrix	·		tor or confirm th Features Type ¹	e absence of	f indicators.)	
(inches) Color (moist) 0-2 10YR 3/2 2-12+ 10YR 3/1 1Type: C=Concentration, D=Depletion, R	100					
(inches) Color (moist) 0-2 10YR 3/2 2-12+ 10YR 3/1 1Type: C=Concentration, D=Depletion, R	100					
0-2 10YR 3/2 2-12+ 10YR 3/1 1Type: C=Concentration, D=Depletion, R	100			Loc ²	Texture	Remarks
2-12+ 10YR 3/1 Type: C=Concentration, D=Depletion, R					loamy sand	
¹ Type: C=Concentration, D=Depletion, R	100					
					fine sandy loam	
	M=Reduced Matri	x, MS=Masked Sand	Grains.		² Location: PL=Pore Linin	g, M=Matrix.
Hydric Soil Indicators: (Applicable to	all LRRs. unless	otherwise noted.)		Indicators f	for Problematic Hydric Soi	ls³:
Histosol (A1)		Polyvalue Below Sur	face (S8) (LRR S		1cm Muck (A9) (LRR O)	
Histic Epipedon (A2)		Thin Dark Surface (S		_	2cm Muck (A10) (LRR \$	
Black Histic (A3)		Loamy Mucky Minera			Reduced Vertic (F18) (o	• •
X Hydrogen Sulfide (A4)		Loamy Gleyed Matrix	((F2)	_	Piedmont Floodplain Soi	
Statified Layers (A5)		Depleted Matrix (F3)			Anomalous Bright Loamy	Soils (F20)
Organic Bodies (A6) (LRR P, T, U)		Redox Dark Surface((F6)		(MLRA 153B)	
5 cm Mucky Mineral (A7) (LRR P,	T, U)	Depleted Dark Surface	ce (F7)		Red Parent Material (TF2	2)
Muck Presence (A8) (LRR U)		Redox Depressions ((F8)		Very Shallow Dark Surfa	ce (TF12) (LRR T, U)
1cm Muck (A9) (LRR P, T)		Marl (F10) (LRR U)			Other (Explain in Remark	ss)
Depleted Below Dark Surface (A11)	<u> </u>	Depleted Ochric (F11	1) (MLRA 151)			
Thick Dark Surface (A12)		Iron-Manganese Mas	, ,). P. T)	3Indicators of hydrophytic	vegetation and
Coastal Prairie Redox (A16) (MLR		Umbric Surface (F13		, - , -,	wetland hydrology must I	=
	· —	Delta Ochric (F17) (I			unless disturbed or probl	•
Sandy Mucky Mineral (S1) (LRR, C				EOD)	uniess disturbed of probl	ematic
Sandy Gleyed Matrix (S4)		Reduced Vertic (F18		•		
Sandy Redox (S5)		Piedmont Floodplain		-		
Stripped Matrix (S6)		Anomalous Bright Lo	amy Soils (F20)	MLRA 149A	, 153C, 153D)	
Dark Surface (S7) (LRR P, S, T, U)					
Restrictive Layer (if observed):						
Type:						
Depth (inches):				Hydric Soils	s Present? YES	(No
				•	-	
Remarks: Loamy sand at 12"+ below soi	I surface soil was	very saturated at 3"	below soil surface	Redox featu	ires could not be seen due t	saturation
tomamor zoamy oana at 12 1 zolow oo.	· carrace, con rrac	voly caralacea at o	20.011 00.1 04.1400	,		
Dark Surface (S7) (LRR P, S, T, U)		_	Hydric Soils	s Present? YES	

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: __ Applicant/Owner: VDOT Sampling Point: WL-23 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): <u>tidal floodpl</u>ain 0-1% Local relief (concave, convex, none): none Slope (%): Long: <u>76°</u> 18' 51.10" Subregion (LRR or MLRA): LRR T 36° 45' 35.32" WGS 84 Lat: Datum: Soil Map Unit Name: Bojac-Urban land-Wando complex E2EM1P and PFO1R NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) significantly disturbed? Are Vegetation ,Soil ,or Hydrology Are "Normal Circumstances" present? Yes ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X Hydric Soil Present? Yes Is the Sampled Area Wetland Hydrology Present? Yes X Within a Wetland? Yes Remarks: Tidal E2EM5 Wetland (Phragmites australis dominant) Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the north of I-64 within tidal waters **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Χ Water-Stained Leaves (B9) Sphagnum moss (D8) (LRR T, U) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Yes Depth (inches): Yes X No Saturation Present? Depth (inches): Wetland Hydrology Present? (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

	Project/Site:	I-64 /High Rise Bridg	ge Corridor St	udy	
	,		<u> </u>	•	Sampling date: 2/3/2014
					Sampling point: WL-23
veç	getation (Four Strata) - Use	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	e Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	Liquidambar styraciflua	2	Y	FAC	That are OBL, FACW, or FAC: 3 (A)
	Sweet-Gum				(/
2.					Total number of Dominant
_					Species across All Strata: 3 (B)
3.					Dercent of Deminent Charles
4.					Percent of Dominant Species That are OBL, FACW, or FAC:100%(A/B)
٦.		_			111at are OBE, 17(OW, OF 17(O.)
	Total Cover: 2	50% of total cover	1%		
		20% of total cover	0%		Prevalence Index worksheet:
	ling /Shrub Stratum (ft)	_			Total % Cover of Multiply by:
1.	Morella cerifera	5	Y	FAC	OBL species x 1 =
2.	Southern Bayberry				FACW species x 2 = FAC species x 3 =
۷.		_			FACU species
3.					UPL species x 5 =
					Column Totals: (A) (B)
4.					Prevalence Index = B/A =
5					II. Lood, C. Woods Co. L. Postor
	Total Cover: 5	50% of total cover	3%		Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation
	Total Cover. 3	20% of total cover	1%		x 2 - Dominance Test is >50%
Her	b Stratum ()	2070 01 10101 00701	170		3 - Prevalence Index is ≤3.0¹
1.	Phragmites australis		Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
	Common Reed				and Remarks or on a separate sheet)
2.					Problematic Hydrophytic Vegetation¹ (Explain)
		<u> </u>			
3.					
4.					¹Indicators of hydric soil and wetland hydrology must
5.					be present Definitions of Four Vegetation Strata:
0.					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.		_			diameter at breast height (DBH), regardless of height.
	Total Cover: 80	50% of total cover	40%		Sapling /Shrub - Woody plants, excluding vines, less than
	1 17 00 0	20% of total cover	16%		3in. DBH and greater than 3.28 ft (1m) tall.
	ody Vine Stratum ()				Harb All barbassays (non woods) plants, regardless of size
1.					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2.					and woody plants less than 3.20 it tall.
	-	_			Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
4.		<u> </u>			Hydrophytic
	Tatal Carran	500/ -f t-t-l	00/		Vegetation
	Total Cover: 0	50% of total cover 20% of total cover	0% 0%		Present? Yes X No
Rer	narks: (Include photo numb				
1101	name. (morado prioto name	or or a sopar	idio orioot.)		Herb (5-ft radius)
			Trees and \	/ines	
			(30-ft radi		
			(55) (144)		
		Γ	C !: /C!		
			Sapling/Shr		
			(15-ft radiu	IS)	

Project/Site:	1-64 /High F	Rise Bridge	Corridor Study	

3011								
Profile Des	cription: (Describe to the	depth need	led to document th	e indicator	or confirm th	e absence o	f indicators.)	
Depth	Matrix			Redox Fe	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-2	10YR 3/1	100					sandy loam	
2-9	10YR 4/1	100					sand	medium grain
9+	10YR 4/1	80	10YR 3/3	20			loamy sand	
¹Type: C=C	oncentration, D=Depletion,	RM=Reduce	ed Matrix, MS=Masl	ked Sand G	rains.		² Location: PL=Por	e Lining, M=Matrix.
Hydric Soil	Indicators: (Applicable t	to all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydr	ic Soils³:
Histos	ol (A1)		Polyvalue B	elow Surfac	ce (S8) (LRR \$	S, T, U)	1cm Muck (A9) (L	RR O)
Histic	Epipedon (A2)		Thin Dark S	urface (S9)	(LRR S, T, U	_	2cm Muck (A10) (LRR S)
	Histic (A3)				F1) (LRR O)			18) (outside MLRA 150A,B)
	gen Sulfide (A4)		Loamy Gley			_		nin Soils (F19) (LRR P, S, T)
_ ′ ′	ed Layers (A5)		X Depleted Ma	•	,		Anomalous Bright	
	ic Bodies (A6) (LRR P, T,	U)	Redox Dark	, ,	3)	_	(MLRA 153B)	, (,
	Mucky Mineral (A7) (LRR F	-	Depleted Da	,	*		Red Parent Materia	al (TF2)
	Presence (A8) (LRR U)	, ., 0,	Redox Depr		. ,	_	_	Surface (TF12) (LRR T, U)
	fuck (A9) (LRR P, T)		Marl (F10) (•	,	_	Other (Explain in F	, , , , , ,
	ted Below Dark Surface (A	11)		•	(MLRA 151)	_	_ Other (Explain III I	(Cinario)
	Dark Surface (A12)	• • •		, ,	es (F12) (LRR () P T)	3Indicators of hydro	ophytic vegetation and
	al Prairie Redox (A16) (ML	PA 150A)			(LRR P, T, U)	3,1,1)	wetland hydrology	. , .
	Mucky Mineral (S1) (LRR	=	Delta Ochrid	, ,			unless disturbed o	'
	Gleyed Matrix (S4)	, 0, 3)			MLRA 150A, 1	IEOR)	uniess disturbed o	Problematic
						-		
	Redox (S5)			•	oils (F19) (ML	•	452C 452D)	
	ed Matrix (S6)		Anomaious	Bright Loan	riy Solis (F20)	(IVILKA 149A	, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)						
	Layer (if observed):							
Type:								
								
Depth (inches):					Hydric Soil	s Present? Y	ES <u>X</u> No
						5		
Remarks: N	flany roots from 0-2" below	soil surface,	soil was very satura	ated at 4" be	elow soil surfac	e, Redox fea	tures could not be see	n due to saturation.
]								
	Corns of Engineers					A (1 1'		Nois Dosios Versios 2.0

Project/Site: I-64 /High Rise Brid	dge Corridor Stud	ly	City/County:	City of Che	esapeake)	Sampling Date	e: <u>2/3/2014</u>
Applicant/Owner: VDOT						State: VA	Sampling Poin	t: WL-24
Investigator(s): Glenn Wilson a	nd David Kwasni	ewski	Section, Town	nship, Range:	·			
	tidal floodplain		Local relief (c			none	Slope (%):	0-1%
Subregion (LRR or MLRA): LRR		Lat:	36° 45′ 35.66′	<u>'</u> Lo	ong: <u>76° 1</u>	18' 47.77"	Datum:	WGS 84
Soil Map Unit Name: Munden-Urb						NWI class	sification: PFO1R	
Are climatic / hydrologic conditions of	n the site typical for the	nis time of year?	Ye	s X No		(If no, expla	in in Remarks.)	
Are Vegetation,Soil	,or Hydrology	significantly d	listurbed?	Are	"Normal Ci	ircumstances" pre	sent? Yes X	No
Are Vegetation,Soil	,or Hydrology	naturally prob	lematic?	(If need	ed, explain	any answers in Re	emarks.)	
SUMMARY OF FINDINGS-A	ttach site man s	howing sampli	ing point loca	tions, tran	sects. in	nportant featu	res. etc.	
Hydrophytic Vegetation Present?	Yes X	No	ing point local	tiono, tiui	100010, 111	inportant route	100,0101	
Hydric Soil Present?	Yes X	No		Is the Sam	oled Area			
Wetland Hydrology Present?	Yes X	No		Within a W		Yes	X No	
								_
Remarks: Tidal E2EM5 Wetland (upp Wetland lat and long were taken app This wetland is located to the north o	roximately in the midd	dle of the wetland (n		on)				
HYDROLOGY								
Wetland Hydrology Indicators:					Secon	ndary Indicators (m	ninimum of two require	ed)
Primary Indicators (minimum of one i	is required; check all t	that apply)				Surface Soil Crack	ks (B6)	
Surface Water (A1)	Ad	quatic Fauna (B13)				Sparsely Vegetate	ed Concave Surface (B8)
X High Water Table (A2)	M	arl Deposits (B15)	(LRR U)		X	Drainage Patterns	(B10)	
X Saturation (A3)	H	ydrogen Sulfide Od	or (C1)			Moss Trim Lines (B16)	
X Water Marks (B1)	0	xidized Rhizosphere	es on Living Roots	s (C3)		Dry-Season Wate	r Table (C2)	
Sediment Deposits (B2)	Pi	resence of Reduced	d Iron (C4)			Crayfish Burrows	(C8)	
Drift Deposits (B3)	R	ecent Reduction in	Tilled Soils (C6)			Saturation Visible	on Aerial Imagery (C	9)
Algal Mat or Crust (B4)	Ti	nin Muck Surface (C	C7)		X	Geomorphic Posit	ion (D2)	
Iron Deposits (B5)	_ 0	ther (Explain in Rer	marks)			Shallow Aquitard (D3)	
Inundation Visible on Aerial Image	agery (B7)					FAC-Neutral Test	(D5)	
X Water-Stained Leaves (B9)						Sphagnum moss ((D8) (LRR T, U)	
Field Observations:								
Surface Water Present? Yes	No X	Depth (inches	s):	-				
Water Table Present? Yes	X No	Depth (inches	s):	5"				
Saturation Present? Yes		Depth (inches	s):	5"	Wetland H	lydrology Presen	t? Yes X	No
(includes capillary fringe)								
Describe Recorded Data (stream gau	uge, monitoring well, a	aerial photos, previo	ous inspections), i	f available:				
Remarks:								

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
				Sampling date: 2/3/2014
				Sampling point: WL-24
Vegetation (Four Strata) - Us			1 1 1	In the state of the state of
T 0: : (D) : : (i)	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1				That are OBL, FACW, or FAC:4(A)
				T
2				Total number of Dominant
				Species across All Strata: 5 (B)
3				
	_			Percent of Dominant Species
4				That are OBL, FACW, or FAC: 80% (A/B)
Total Cover: 0	50% of total cover	0%		
	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)	_			Total % Cover of Multiply by:
1. Baccharis halimifolia	15	Y	FAC	OBL species x 1 =
Groundseltree				FACW species x 2 =
2	<u> </u>			FAC species x 3 =
				FACU species x 4 =
3.				UPL species x 5 =
-			_ .	Column Totals: (A) (B)
4.				Prevalence Index = B/A =
5				
				Hydrophytic Vegetation Indicators:
Total Cover: 15	50% of total cover	8%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	3%	·	X 2 - Dominance Test is >50%
Herb Stratum ()	20,000. 1010. 0010.	0,0		3 - Prevalence Index is ≤3.0 ¹
Phragmites australis	50		FACW	4 - Morphological Adaptations¹ (Provide supporting data
Common Reed			TACV	and Remarks or on a separate sheet)
			FACW	·
		<u>r</u>	FACVV	Problematic Hydrophytic Vegetation¹ (Explain)
Jesuit's-Bark	<u> </u>			
3.	_			
<u> </u>	_			
4				¹Indicators of hydric soil and wetland hydrology must
				be present
5				Definitions of Four Vegetation Strata:
				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
Total Cover: 70	50% of total cover	35%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	14%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
Smilax rotundifolia	5	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
Horsebrier				and woody plants less than 3.28 ft tall.
2. Lonicera japanica	2	Y	FACU	
Limber Honeysuckle				Woody Vine - All woody vines greater than 3.28 ft in height.
3	<u> </u>			
4.				Hydrophytic
				Vegetation
Total Cover: 7	50% of total cover	4%		Present? Yes X No
	20% of total cover	1%		
Remarks: (Include photo num	bers here or on a sepa	rate sheet.)		
	•	•		Herb (5-ft radius)
			,	
		Trees and \		
		(30-ft rad	ius)	
		Sapling/Shr	ub _	
		(15-ft radiu	is)	
	,			

Project/Site: I-64 /High Rise Bridge Corridor Study				
	Project/Site:	I-64 /High Rise	Bridge Corridor Study	

c	_	:1
J	u	•

	scription: (Describe to the	depth need	led to document the			ne absence o	of indicators.)	
Depth (inches)	Matrix Color (moist)	%	Color (moist)	Redox Fea	Type ¹	Loc ²	Texture	Remarks
0-3	10YR 2/1	100	Color (moist)	70	Турс		loam	Remarks
3-7	10YR 3/1	100					loamy sand	
7-9	10YR 6/2	100					sand	
9-12+	10YR 7/2	100					sand	
J 121	1011(1/2	100					Juliu	
¹Tvpe: C=C	Concentration, D=Depletion,	RM=Reduce	ed Matrix. MS=Mas	ked Sand Gr	ains.		² Location: PL=Pore Linir	ng. M=Matrix.
-/-	I Indicators: (Applicable t		,			Indicators	for Problematic Hydric So	<u>.</u>
=	sol (A1)	•		=	e (S8) (LRR \$		1cm Muck (A9) (LRR O	
	Epipedon (A2)				(LRR S, T, U	_	2cm Muck (A10) (LRR	•
	Histic (A3)			ky Mineral (F	-	′ –	Reduced Vertic (F18) (c	
	gen Sulfide (A4)			ed Matrix (F		_	Piedmont Floodplain So	· •
	ed Layers (A5)		X Depleted M	-	,	_	Anomalous Bright Loam	
	nic Bodies (A6) (LRR P, T,	U)		Surface(F6)	_	(MLRA 153B)	, (. ==)
_ `	Mucky Mineral (A7) (LRR P	•		ark Surface			Red Parent Material (TF	2)
	Presence (A8) (LRR U)	, ., . ,		ressions (F8	. ,	_	Very Shallow Dark Surfa	•
	Muck (A9) (LRR P, T)		Marl (F10)	, ,	,	_	Other (Explain in Remar	
	ted Below Dark Surface (A1	11)		chric (F11) (MI RΔ 151\	_	Other (Explain in Remai	NO)
	Dark Surface (A12)	' ' '		, , ,	s (F12) (LRR	O P T)	3Indicators of hydrophytic	c vegetation and
	tal Prairie Redox (A16) (ML	RΔ 150Δ)			LRR P, T, U)	o, . , .,	wetland hydrology must	•
	Mucky Mineral (S1) (LRR,	•		c (F17) (ML			unless disturbed or prob	•
	y Gleyed Matrix (S4)	, 0, 3,			MLRA 150A, [,]	150B)	unless disturbed of prob	iematic
	y Redox (S5)			· , ,	ils (F19) (ML	•		
	ed Matrix (S6)			•	, , ,	•	A, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	IIN	Anomalous	Blight Loan	iy 30ii3 (i 20)	(INILINA 143F	4, 1330, 133 <i>D)</i>	
	Layer (if observed):	U)						
Type:	Layer (II observed).							
туре.								
Denth ((inches):					Hydric Soil	Is Present? YES	X No
Deptii ((IIIOIIes).					riyuric 30ii	is Fresentr 123	<u> </u>
Remarks:								

Project/Site: I-64 /High Rise Brid	ge Corridor Study	City/Cou	inty: City of Che	esapeake		Sampling Date:	2/3/2014
Applicant/Owner: VDOT				State:	VA	Sampling Point:	
Investigator(s): Glenn Wilson an	d David Kwasniews	Ski Section,	Township, Range	<u> </u>		east	side of wetland
• • • • • • • • • • • • • • • • • • • •	tidal floodplain		lief (concave, conv	· · · · —	none	Slope (%):	0-1%
Subregion (LRR or MLRA): LRR T		Lat: 36° 45′ 30		ong: 76° 18′ 46.	01"	Datum:	WGS 84
Soil Map Unit Name: Pocaty muck			complex	_	NWI classification	n: <u>E2EM1P</u>	and PFO1R
Are climatic / hydrologic conditions on	the site typical for this t	ime of year?	Yes X No	(f no, explain in Re	emarks.)	
Are Vegetation,Soil,	or Hydrology	significantly disturbed?	Are	"Normal Circumsta	ances" present?	Yes X	No
Are Vegetation,Soil,	or Hydrology	_naturally problematic?	(If need	ed, explain any ans	wers in Remarks.)	
SUMMARY OF FINDINGS-Att	tach site map sho	wing sampling point	locations, tran	sects, importa	nt features, e	etc.	
Hydrophytic Vegetation Present?	Yes X	No	,	•	·		
Hydric Soil Present?	Yes X	No	Is the Sam	pled Area			
Wetland Hydrology Present?	Yes X	No	Within a W	/etland?	Yes X	No	
Remarks: Tidal E2EM Wetland Wetland lat and long were taken appro This wetland is located to the south of East side of wetland		of the wetland (not soil bore	location)				
HYDROLOGY							
Wetland Hydrology Indicators:				Secondary Inc	dicators (minimum	of two required	i)
Primary Indicators (minimum of one is	required; check all that	apply)		Surface	Soil Cracks (B6)		
Surface Water (A1)	Aqua	tic Fauna (B13)		Sparsel	y Vegetated Cond	ave Surface (B8	3)
X High Water Table (A2)	Marl I	Deposits (B15) (LRR U)		Drainag	e Patterns (B10)		
X Saturation (A3)	X Hydro	gen Sulfide Odor (C1)		Moss T	rim Lines (B16)		
Water Marks (B1)	Oxidi:	zed Rhizospheres on Living	Roots (C3)	Dry-Sea	son Water Table	(C2)	
Sediment Deposits (B2)	Prese	ence of Reduced Iron (C4)		Crayfish	Burrows (C8)		
Drift Deposits (B3)	Rece	nt Reduction in Tilled Soils (C6)	Saturati	on Visible on Aeri	al Imagery (C9)	
Algal Mat or Crust (B4)	Thin !	Muck Surface (C7)		X Geomo	rphic Position (D2)	
Iron Deposits (B5)	Other	(Explain in Remarks)		Shallow	Aquitard (D3)		
X Inundation Visible on Aerial Ima	gery (B7)			X FAC-Ne	eutral Test (D5)		
X Water-Stained Leaves (B9)				Sphagr	num moss (D8) (L	.RR T, U)	
Field Observations:							
Surface Water Present? Yes	No X	Depth (inches):	_				
Water Table Present? Yes	X No	Depth (inches):	0"				
Saturation Present? Yes	X No	Depth (inches):	0"	Wetland Hydrolog	ov Present?	Yes X	No
(includes capillary fringe)		-1. (,		, , , , , , , , , , , , , , , , , , , ,			• -
Describe Recorded Data (stream gauge	ge, monitoring well, aeria	al photos, previous inspectio	ns), if available:				
Remarks:							

	Project/Site:	I-64 /High Rise Bridg	ge Corridor St	udy	
					Sampling date: 2/3/2014
					Sampling point: WL-28
۷e	getation (Four Strata) - Use	scientific names of	plants.		
	-	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	e Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	•				That are OBL, FACW, or FAC: 3 (A)
2.					Total number of Dominant
	-				Species across All Strata: 3 (B)
3.					Openies abrood / iii etrata.
٥.		_			Percent of Dominant Species
4					
4.		_			That are OBL, FACW, or FAC: 100% (A/B)
					
	Total Cover: 0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1.	Baccharis halimifolia	2	Y	FAC	OBL species x 1 =
	Groundseltree				FACW species x 2 =
2.		<u> </u>			FAC species x 3 =
		_			FACU species x 4 =
3.					UPL species x 5 =
					Column Totals: (A) (B)
4.					Prevalence Index = B/A =
4.	-			-	Frevalence index = D/A =
_					
5					
			10/		Hydrophytic Vegetation Indicators:
	Total Cover: 2	50% of total cover	1%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	0%		x 2 - Dominance Test is >50%
He	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Spartina alterniflora	75	Y	OBL	4 - Morphological Adaptations ¹ (Provide supporting data
	Saltwater Cord Grass				and Remarks or on a separate sheet)
2.	Juncus roemerianus	25	Y	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
	Roemer's Rush				· · · · · · · · · · · · · · · · · · ·
3.	Phragmites australis		N	FACW	
J.	Common Reed			TACW	
,	Common Reed			-	The disease of hydric coil and westered hydrology revest
4.	1				¹Indicators of hydric soil and wetland hydrology must
_					be present
5.					Definitions of Four Vegetation Strata:
		<u> </u>			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.		_			diameter at breast height (DBH), regardless of height.
	Total Cover: 110	50% of total cover	55%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	22%		3in. DBH and greater than 3.28 ft (1m) tall.
Wd	oody Vine Stratum ()				
1.					Herb - All herbaceous (non-woody) plants, regardless of size,
	-				and woody plants less than 3.28 ft tall.
2.	-				and needy plante less than eles it tall
					Woody Vine - All woody vines greater than 3.28 ft in height.
3.	-				Violativinia - All woody vines greater than 5.25 it in neight.
J.	-			-	
	1				Hadron bada
4.		_			Hydrophytic
					Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
		20% of total cover	0%		
	marks: (Include photo numb				Horb /F ft radius)
Ph	ragmites australis was obser	ved along the wetland	l edge		Herb (5-ft radius)
			Trees and \	linos	
			(30-ft radi	ius)	
		'			
			Sapling/Shr	ub	
			(15-ft radiu	is)	
		L			

Project/Site: I-64 /High Rise Bridge Corridor Study

Soil								
Profile Des	cription: (Describe to the	depth need	ed to document tl	ne indicator	or confirm th	e absence o	f indicators.)	
Depth	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-5	10YR 3/2	100	()	,,,	- 1)		loam	many roots
								many roots
5-16+	10YR 6/1	100					loamy sand	-
								-
¹Type: C=Co	oncentration, D=Depletion,	RM=Reduce	d Matrix, MS=Mas	ked Sand Gr	ains.		² Location: PL=Pore	E Lining, M=Matrix.
Hydric Soil	Indicators: (Applicable t	to all LRRs.	unless otherwise	noted.)		Indicators	for Problematic Hydr	ic Soils³:
Histoso	`	,		,	e (S8) (LRR S		1cm Muck (A9) (L	
	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10) (•
_	, ,					_	_	•
	Histic (A3)			ky Mineral (F		_		18) (outside MLRA 150A,B)
	gen Sulfide (A4)			ed Matrix (F:	۷)	_	_	in Soils (F19) (LRR P, S, T)
	ed Layers (A5)		X Depleted M			_	_ Anomalous Bright	Loamy Soils (F20)
Organi	ic Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6))		(MLRA 153B)	
5 cm N	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface ((F7)		Red Parent Materia	al (TF2)
Muck F	Presence (A8) (LRR U)		Redox Dep	ressions (F8))	_	Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm M	luck (A9) (LRR P, T)		Marl (F10) ((LRR U)			Other (Explain in F	emarks)
X Deplet	ed Below Dark Surface (A	11)	Depleted O	chric (F11) (MLRA 151)		_	
	Dark Surface (A12)	,		. , ,	s (F12) (LRR (D. P. T)	3Indicators of hydro	ophytic vegetation and
	al Prairie Redox (A16) (ML	RA 150A)			LRR P, T, U)	-, , ,	wetland hydrology	· · -
	Mucky Mineral (S1) (LRR	•		c (F17) (ML I			unless disturbed o	•
		, 0, 3)			NLRA 151) MLRA 150A, 1	EOD)	uniess disturbed o	problematic
	Gleyed Matrix (S4)			. , ,	•	•		
	Redox (S5)			•	ils (F19) (MLI	•		
	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)			1			
Restrictive	Layer (if observed):							
Type:								
Depth (i	inches):					Hydric Soils	s Present? Y	ES X No
	·					-		
Remarks:								

Project/Site: I-64 /High Rise Bridge Corridor Study	City/County: City of C	Chesapeake	Sampling Date: 2/3/2014
Applicant/Owner: VDOT		State: VA	Sampling Point: WL-28 west
Investigator(s): Glenn Wilson and David Kwasniewski	Section, Township, Rar	nge:	west side of wetland
Landform (hillslope, terrace, etc.): tidal floodplain	Local relief (concave, c	onvex, none): none	Slope (%): 0-1%
Subregion (LRR or MLRA): LRR T Lat:	36° 45' 32.00"	Long: 76° 19' 00.84"	Datum: WGS 84
Soil Map Unit Name: Pocaty mucky peat		NWI cla	assification: E2EM1P and PFO1R
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes X	No (If no, ex	plain in Remarks.)
Are Vegetation,Soil,or Hydrologysignificantly d	isturbed?	Are "Normal Circumstances" p	resent? Yes X No
Are Vegetation,Soil,or Hydrology significantly d Are Vegetation,Soil,or Hydrology naturally prob	lematic? (If ne	eeded, explain any answers in	Remarks.)
SUMMARY OF FINDINGS-Attach site map showing sampli	ing point locations, tr	ransects, important fea	tures, etc.
Hydrophytic Vegetation Present? Yes X No			
Hydric Soil Present? Yes X No	Is the S	ampled Area	
Wetland Hydrology Present? Yes X No		a Wetland? Yes	s <u>X</u> No
Remarks: Tidal E2EM Wetland Wetland lat and long were taken approximately in the middle of the wetland (r This wetland is located to the south of I-64 within tidal waters Westside of wetland	not soil bore location)		
HYDROLOGY			
Wetland Hydrology Indicators:		Secondary Indicators	(minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		Surface Soil Cra	acks (B6)
Surface Water (A1) Aquatic Fauna (B13)		Sparsely Vegeta	ated Concave Surface (B8)
X High Water Table (A2) Marl Deposits (B15)	(LRR U)	X Drainage Patter	rns (B10)
X Saturation (A3) X Hydrogen Sulfide Od	or (C1)	Moss Trim Line	s (B16)
Water Marks (B1) Oxidized Rhizosphere	es on Living Roots (C3)	Dry-Season Wa	ater Table (C2)
Sediment Deposits (B2) Presence of Reduced	d Iron (C4)	Crayfish Burrow	vs (C8)
Drift Deposits (B3) Recent Reduction in	Tilled Soils (C6)	Saturation Visib	ole on Aerial Imagery (C9)
Algal Mat or Crust (B4) Thin Muck Surface (0	27)	X Geomorphic Po	sition (D2)
Iron Deposits (B5) Other (Explain in Rer	narks)	Shallow Aquitar	d (D3)
Inundation Visible on Aerial Imagery (B7)		X FAC-Neutral Te	est (D5)
X Water-Stained Leaves (B9)		Sphagnum mos	ss (D8) (LRR T, U)
Field Observations:			
Surface Water Present? Yes No X Depth (inches	s)· -		
Water Table Present? Yes X No Depth (inches			
Saturation Present? Yes X No Depth (inches	·	Wetland Hydrology Pres	ent? Yes X No
(includes capillary fringe)	, <u> </u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previo	ous inspections), if available	:	
Remarks:			

	Project/Site:	I-64 /High Rise Bride	ge Corridor St	udy	
	•	<u> </u>			Sampling date: 2/3/2014
					Sampling point: WL-28 west
۷e	getation (Four Strata) - Use	scientific names of	plants.		
		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.		_			That are OBL, FACW, or FAC:3(A)
2.					Total number of Dominant
					Species across All Strata: 3 (B)
3.		_			
					Percent of Dominant Species
4.		_			That are OBL, FACW, or FAC:100% (A/B)
		_			
	Total Cover: 0	50% of total cover	0%	-	
		20% of total cover	0%		Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)			-	Total % Cover of Multiply by:
1.			Y	FAC	OBL species x 1 =
	Groundseltree	<u> </u>			FACW species x 2 =
2.	Morella cerifera		Y	FAC	FAC species x 3 =
	Southern Bayberry	- 			FACU species x 4 =
3.	ecution Bayberry	_			UPL species x 5 =
Ο.					Column Totals: (A) (B)
4.	·			-	Prevalence Index = B/A =
→.					Trevalence index = D/A =
5	·			-	
J					Hydrophytic Vegetation Indicators:
	Total Cover: 4	50% of total cover	2%		1 - Rapid Test for Hydrophytic Vegetation
	Total Cover. 4	20% of total cover			x 2 - Dominance Test is >50%
	1.00	20% of total cover	1%		
	rb Stratum ()				3 - Prevalence Index is ≤3.0¹
1.	Spartina alterniflora	90	Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data
_	Saltwater Cord Grass				and Remarks or on a separate sheet)
2.	Phragmites australis	5	N	FACW	Problematic Hydrophytic Vegetation¹ (Explain)
	Common Reed				
3.					
4.		_			¹Indicators of hydric soil and wetland hydrology must
	-	_			be present
5.					Definitions of Four Vegetation Strata:
	-	_			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.	-	_			diameter at breast height (DBH), regardless of height.
	-	_			
	Total Cover: 95	50% of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	19%		3in. DBH and greater than 3.28 ft (1m) tall.
	oody Vine Stratum ()	_			
1.					Herb - All herbaceous (non-woody) plants, regardless of size,
					and woody plants less than 3.28 ft tall.
2.					
					Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
4.					Hydrophytic
					Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
		20% of total cover	0%		
Re	marks: (Include photo numb	ers here or on a sepa	rate sheet.)		11 1 (5 C
	·	·	,		Herb (5-ft radius)
			- 1,	,	
			Trees and \		
			(30-ft radi	ius)	
			Sapling/Shr	ub	
			(15-ft radiu	13)	

Project/Site:	I-64 /High Rise	Bridge Corridor	Study	

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Depth Matrix Redox Features (inches) Color (moist) % Color (moist) % Type¹ Loc² Texture Remarks D-16+ 10YR 3/2 100 Indicators. Trype: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Trype: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Polyvalue Below Surface (S8) (LRR S, T, U) 1cm Muck (A9) (LRR O) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR S, T, U) 2cm Muck (A10) (LRR S) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Reduced Vertic (F18) (outside MLRA 150A,B)								Sampling date: 2/3	3/2014
Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Depth Matrix Redox Features (Inches) Color (moist) % Type¹ Loc² Texture Remarks 0-16+ 10YR 3/2 100								Sampling point: WI	28 west
Depth Matrix Redox Features Color (moist) % Color (moist) % Type! Loc2 Texture Remarks Defect 10YR 3/2 100 100 100 100 100 100 100 100 100 10	Soil								
(inches) Color (moist) % Color (moist) % Type¹ Loc² Texture Remarks D-16+ 10YR 3/2 100	Profile Des	cription: (Describe to the	depth need	ded to document t	the indicator	or confirm th	e absence	of indicators.)	
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. **Location: PL=Pore Lining, M=Matrix. *Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils*: Irom Muck (A9) (LRR O) Iro	Depth	Matrix			Redox Fea	atures			
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Hidrosoil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR S, T, U) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Statified Layers (A5) Organic Bodies (A6) (LRR P, T, U) Tom Muck (A9) (LRR P, T, U) Redox Dark Surface (F7) Redox Dark Surface (F7) Redox Dark Surface (F7) Tom Muck (A9) (LRR P, T, U) Tom Muck (A9) (LRR P, T) Depleted Below Dark Surface (F13) (MLRA 151) Thick Dark Surface (A12) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Delta Ochric (F17) (MLRA 150) Sandy Mucky Mineral (S1) (LRR, O, S) Delta Ochric (F17) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Delta Ochric (F17) (MLRA 150A) Sandy Mucky (S6) Dark Surface (S7) Redox Dark Surface (F13) (LRR 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Piedmont Floodplain Soils (F19) (MLRA 149A) Solitiped Matrix (S6) Dark Surface (S7) Pethon Floodplain Soils (F19) (MLRA 149A) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Depth (inches): Hydric Soils Present? YES X No	(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Polyvalue Below Surface (S8) (LRR S, T, U) Histosol (A2) Histosol (A2) Histosol (A2) Histosol (A2) Thin Dark Surface (S9) (LRR S, T, U) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Statified Layers (A5) Coganic Bodies (A6) (LRR P, T, U) Muck (A9) (LRR P, T, U) Depleted Matrix (F3) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Fed Parent Material (TF2) Muck Presence (A8) (LRR P, T, U) Depleted Dark Surface (F7) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Depleted Delow Dark Surface (A11) Thick Dark Surface (A11) Depleted Ochric (F11) (MLRA 151) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (LRR O, P, T, U) Predox Dark Surface (A12) Umbric Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Other (Explain in Remarks) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 150A) Stripped Matrix (S6) Dark Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (F12) (LRR T, U) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No	0-16+	10YR 3/2	100					loamy sand	many roots
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Polyvalue Below Surface (S8) (LRR S, T, U) Histosol (A2) Histosol (A2) Histosol (A2) Histosol (A2) Thin Dark Surface (S9) (LRR S, T, U) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Statified Layers (A5) Coganic Bodies (A6) (LRR P, T, U) Muck (A9) (LRR P, T, U) Depleted Matrix (F3) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Fed Parent Material (TF2) Muck Presence (A8) (LRR P, T, U) Depleted Dark Surface (F7) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Depleted Delow Dark Surface (A11) Thick Dark Surface (A11) Depleted Ochric (F11) (MLRA 151) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (LRR O, P, T, U) Predox Dark Surface (A12) Umbric Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Other (Explain in Remarks) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 150A) Stripped Matrix (S6) Dark Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (F12) (LRR T, U) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No									
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Polyvalue Below Surface (S8) (LRR S, T, U) Histosol (A2) Histosol (A2) Histosol (A2) Histosol (A2) Thin Dark Surface (S9) (LRR S, T, U) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Statified Layers (A5) Coganic Bodies (A6) (LRR P, T, U) Muck (A9) (LRR P, T, U) Depleted Matrix (F3) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Fed Parent Material (TF2) Muck Presence (A8) (LRR P, T, U) Depleted Dark Surface (F7) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Depleted Delow Dark Surface (A11) Thick Dark Surface (A11) Depleted Ochric (F11) (MLRA 151) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (LRR O, P, T, U) Predox Dark Surface (A12) Umbric Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Other (Explain in Remarks) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 150A) Stripped Matrix (S6) Dark Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (F12) (LRR T, U) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No									
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Polyvalue Below Surface (S8) (LRR S, T, U) Histosol (A2) Histosol (A2) Histosol (A2) Histosol (A2) Thin Dark Surface (S9) (LRR S, T, U) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Statified Layers (A5) Coganic Bodies (A6) (LRR P, T, U) Muck (A9) (LRR P, T, U) Depleted Matrix (F3) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Fed Parent Material (TF2) Muck Presence (A8) (LRR P, T, U) Depleted Dark Surface (F7) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Depleted Delow Dark Surface (A11) Thick Dark Surface (A11) Depleted Ochric (F11) (MLRA 151) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (LRR O, P, T, U) Predox Dark Surface (A12) Umbric Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Other (Explain in Remarks) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 150A) Stripped Matrix (S6) Dark Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (F12) (LRR T, U) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No									
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Polyvalue Below Surface (S8) (LRR S, T, U) Histosol (A2) Histosol (A2) Histosol (A2) Histosol (A2) Thin Dark Surface (S9) (LRR S, T, U) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Statified Layers (A5) Coganic Bodies (A6) (LRR P, T, U) Muck (A9) (LRR P, T, U) Depleted Matrix (F3) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Fed Parent Material (TF2) Muck Presence (A8) (LRR P, T, U) Depleted Dark Surface (F7) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Depleted Delow Dark Surface (A11) Thick Dark Surface (A11) Depleted Ochric (F11) (MLRA 151) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (LRR O, P, T, U) Predox Dark Surface (A12) Umbric Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Other (Explain in Remarks) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 150A) Stripped Matrix (S6) Dark Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (F12) (LRR T, U) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No									
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Polyvalue Below Surface (S8) (LRR S, T, U) Histosol (A2) Histosol (A2) Histosol (A2) Histosol (A2) Thin Dark Surface (S9) (LRR S, T, U) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Statified Layers (A5) Coganic Bodies (A6) (LRR P, T, U) Muck (A9) (LRR P, T, U) Depleted Matrix (F3) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Fed Parent Material (TF2) Muck Presence (A8) (LRR P, T, U) Depleted Dark Surface (F7) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Depleted Delow Dark Surface (A11) Thick Dark Surface (A11) Depleted Ochric (F11) (MLRA 151) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (LRR O, P, T, U) Predox Dark Surface (A12) Umbric Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Other (Explain in Remarks) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 150A) Stripped Matrix (S6) Dark Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (F12) (LRR T, U) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No									
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Polyvalue Below Surface (S8) (LRR S, T, U) Histosol (A2) Histosol (A2) Histosol (A2) Histosol (A2) Thin Dark Surface (S9) (LRR S, T, U) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Statified Layers (A5) Coganic Bodies (A6) (LRR P, T, U) Muck (A9) (LRR P, T, U) Depleted Matrix (F3) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Fed Parent Material (TF2) Muck Presence (A8) (LRR P, T, U) Depleted Dark Surface (F7) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Depleted Delow Dark Surface (A11) Thick Dark Surface (A11) Depleted Ochric (F11) (MLRA 151) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (LRR O, P, T, U) Predox Dark Surface (A12) Umbric Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U) Other (Explain in Remarks) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 150A) Stripped Matrix (S6) Dark Surface (F7) Red Parent Material (TF2) Very Shallow Dark Surface (F12) (LRR T, U) Other (Explain in Remarks) Pindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No									
Histosol (A1)						ains.		² Location: PL=Pore	Lining, M=Matrix.
Histic Epipedon (A2) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR Q) Reduced Vertic (F18) (outside MLRA 150A,B) X Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soils (F19) (LRR P, S, T) Statified Layers (A5) Organic Bodies (A6) (LRR P, T, U) Redox Dark Surface (F6) Mucky Mineral (A7) (LRR P, T, U) Pepleted Dark Surface (F7) Muck Presence (A8) (LRR U) Pepleted Dark Surface (A9) Pepleted Dark Surface (A11) Thick Dark Surface (A12) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, Q, S) Sandy Gleyed Matrix (S6) Dark Surface (S7) (LRR P, S, T, U) Redox Dark Surface (F12) (LRR Q, P, T) World (F18) (MLRA 150A) Umbric Surface (F12) (LRR Q, P, T) Sandy Mucky Mineral (S5) Dark Surface (S7) (LRR P, S, T, U) Reduced Vertic (F18) (MLRA 151) Iron-Manganese Masses (F12) (LRR Q, P, T) Sandy Gleyed Matrix (S4) Reduced Vertic (F18) (MLRA 151) Reduced Vertic (F18) (MLRA 150A) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No	Hydric Soil	Indicators: (Applicable to	o all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydri	c Soils³:
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Reduced Vertic (F18) (outside MLRA 150A,B) X Hydrogen Sulfide (A4) Statified Layers (A5) Organic Bodies (A6) (LRR P, T, U) Muck Presence (A8) (LRR P, T, U) Depleted Dark Surface (F7) Muck Presence (A8) (LRR P, T) Depleted Dark Surface (F8) Marl (F10) (LRR U) Depleted Derk Surface (F1) Marl (F10) (LRR U) Depleted Derk Surface (F1) Thick Dark Surface (A12) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mineral (S1) (LRR, O, S) Sandy Medox (S5) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (LRR O, P, T) Piedmont Floodplain Soils (F19) (LRR O, P, T) Redox Depressions (F8) Wery Shallow Dark Surface (TF12) (LRR T, U) Other (Explain in Remarks) Other (Explain in Remarks) Popleted Derkoric (F11) (MLRA 151) Umbric Surface (F12) (LRR O, P, T) Popleted		` '				. , .	-	1cm Muck (A9) (LF	tR O)
X Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Piedmont Floodplain Soils (F19) (LRR P, S, T) Statified Layers (A5) X Depleted Matrix (F3) Anomalous Bright Loamy Soils (F20) Organic Bodies (A6) (LRR P, T, U) Redox Dark Surface (F6) (MLRA 153B) 5 cm Mucky Mineral (A7) (LRR P, T, U) Depleted Dark Surface (F7) Red Parent Material (TF2) Muck Presence (A8) (LRR U) Redox Depressions (F8) Very Shallow Dark Surface (TF12) (LRR T, U) 1 cm Muck (A9) (LRR P, T) Marl (F10) (LRR U) Other (Explain in Remarks) Depleted Below Dark Surface (A11) Tinck Dark Surface (A12) Iron-Manganese Masses (F12) (LRR O, P, T) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Mucky Mineral (S1) (LRR, O, S) Delta Ochric (F17) (MLRA 150A) Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present, unless disturbed or problematic Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Stripped Matrix (S6) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Dark Surface (S7) (LRR P, S, T, U) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No							_		
Statified Layers (A5)					-		_	·	
Organic Bodies (A6) (LRR P, T, U) Redox Dark Surface(F6) (MLRA 153B) 5 cm Mucky Mineral (A7) (LRR P, T, U) Depleted Dark Surface (F7) Red Parent Material (TF2) Muck Presence (A8) (LRR U) Redox Depressions (F8) Very Shallow Dark Surface (TF12) (LRR T, U) 1 cm Muck (A9) (LRR P, T) Marl (F10) (LRR U) Other (Explain in Remarks) Depleted Below Dark Surface (A11) Depleted Ochric (F11) (MLRA 151) Thick Dark Surface (A12) Iron-Manganese Masses (F12) (LRR O, P, T) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Sandy Mucky Mineral (S1) (LRR, O, S) Delta Ochric (F17) (MLRA 151) unless disturbed or problematic Sandy Gleyed Matrix (S4) Reduced Vertic (F18) (MLRA 150A, 150B) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Stripped Matrix (S6) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No		- : :			-	2)	_		(, (, , , ,
5 cm Mucky Mineral (A7) (LRR P, T, U) Muck Presence (A8) (LRR U) Redox Depressions (F8) Very Shallow Dark Surface (TF12) (LRR T, U) 1 cm Muck (A9) (LRR P, T) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Stripped Matrix (S6) Dark Surface (S7) (LRR P, S, T, U) Redox Depressions (F8) Very Shallow Dark Surface (TF12) (LRR T, U) Other (Explain in Remarks) Iron-Manganese Masses (F12) (LRR O, P, T) alndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Reduced Vertic (F18) (MLRA 151) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Stripped Matrix (S6) Dark Surface (S7) (LRR P, S, T, U) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No		• , ,			. ,		_		oamy Soils (F20)
Muck Presence (A8) (LRR U) 1 cm Muck (A9) (LRR P, T) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Sandy Redox (S5) Dark Surface (S7) (LRR P, S, T, U) Restrictive Layer (if observed): Type: Depth (inches): Marl (F10) (LRR U) Depressions (F8) Very Shallow Dark Surface (TF12) (LRR T, U) Other (Explain in Remarks) Inch (RLR T, U) Wetland hydrology must be present, unless disturbed or problematic Wetland hydrology must be present, unless disturbed or problematic Marl (F10) (LRR P, T, U) Wetland hydrology must be present, unless disturbed or problematic Marl (F12) (LRR T, U) Wetland hydrology must be present, unless disturbed or problematic Marl (F10) (LRR P, T, U) Wetland hydrology must be present, unless disturbed or problematic Marl (F10) (LRR P, T, U) Wetland hydrology must be present, unless disturbed or problematic Marl (F12) (MLRA 150A) Wetland hydrology must be present, unless disturbed or problematic Marl (F12) (MLRA 150A) Wetland hydrology must be present, unless disturbed or problematic Marl (F12) (MLRA 150A) Wetland hydrology must be present, unless disturbed or problematic Marl (F12) (MLRA 150A) Wetland hydrology must be present, unless disturbed or problematic Marl (F12) (MLRA 150A) Marl (F10) (MLRA 150A) Wetland hydrology must be present, unless disturbed or problematic Marl (F10) (MLRA 150A) Marl (F12) (MLRA 150A) Marl (F10) (ML			-		` '			. ,	
1 cm Muck (A9) (LRR P, T) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Sandy Redox (S5) Dark Surface (S7) (LRR P, S, T, U) Stripped Matrix (S6) Dark Surface (S7) (LRR P, S, T, U) Restrictive Layer (if observed): Type: Depth (inches): Marl (F10) (LRR U) Other (Explain in Remarks) Other (F13) (LRR P, T, U) Other (Explain in Remarks) Other (Ex			, T, U)			` '	_		
Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Coastal Prairie Redox (A16) (MLRA 150A) Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR P, S, T, U) Restrictive Layer (if observed): Type: Depleted Ochric (F11) (MLRA 151) Iron-Manganese Masses (F12) (LRR O, P, T) Iron-Manganese Masses (F12) (LRR P, T, U) Wetland hydrology must be present, unless disturbed or problematic Matrix (S6) Reduced Vertic (F18) (MLRA 150A, 150B) Piedmont Floodplain Soils (F19) (MLRA 149A) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No					` ')	_		
Thick Dark Surface (A12)					-		_	Other (Explain in Re	emarks)
Coastal Prairie Redox (A16) (MLRA 150A) Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present, Sandy Mucky Mineral (S1) (LRR, O, S) Delta Ochric (F17) (MLRA 151) unless disturbed or problematic Sandy Redox (S4) Reduced Vertic (F18) (MLRA 150A, 150B) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Stripped Matrix (S6) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No		,	1)		` , '	,			
Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR P, S, T, U) Restrictive Layer (if observed): Type: Depth (inches): Delta Ochric (F17) (MLRA 151) unless disturbed or problematic needuced Vertic (F18) (MLRA 150A, 150B) New Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 149A) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Hydric Soils Present? YES X No		, ,					O, P, T)		· · · · · · · · · · · · · · · · · · ·
Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A) Stripped Matrix (S6) Dark Surface (S7) (LRR P, S, T, U) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No		, , ,	•						•
Sandy Redox (S5)			O, S)			-		unless disturbed or	problematic
Stripped Matrix (S6) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) Dark Surface (S7) (LRR P, S, T, U) Restrictive Layer (if observed): Type: Depth (inches): Hydric Soils Present? YES X No							-		
Dark Surface (S7) (LRR P, S, T, U) Restrictive Layer (if observed):		` '			•	. , .	•	A 4500 450D)	
No No No No No No No No		, ,		Anomalous	s Bright Loam	y Soils (F20)	(MLRA 149	A, 153C, 153D)	
Type: Hydric Soils Present? YES X No			U)						
Depth (inches): Hydric Soils Present? YES X No		Layer (if observed):							
	Type:								
	Donth (i	inahaa):					Uvdria Cai	ilo Brocont? VE	S V No
Remarks: streaking was observed starting at 7"±	Deptil (i	inches).					nyunc 30i	iis Presentr TE	.5 <u>X</u> NO
	Remarks: s	streaking was observed star	ting at 7"±						

Project/Site: I-64 /High Rise Bri	idge Corridor Study	/	City/County:	City of Che	esapeake)	Sampling D	Pate: 2/3/2014	4
Applicant/Owner: VDOT						State: VA	Sampling P	oint: WL-29, 30	
Investigator(s): Glenn Wilson a	and David Kwasnie	wski	Section, Tow	nship, Range:					_
Landform (hillslope, terrace, etc.):			•	oncave, conve		none	Slope (%		
Subregion (LRR or MLRA): LRR		Lat:	36° 45′ 32.39	<u>"</u> Lo	ong: <u>76° ′</u>	19' 01.96"	Datum		_
Soil Map Unit Name: Pocaty muc						NWI class	sification: E2EN	<i>I</i> 11P	_
Are climatic / hydrologic conditions of	on the site typical for thi	s time of year?	Ye	s X No		(If no, expla	ain in Remarks.)		
Are Vegetation,Soil	or Hydrology	significantly di	isturbed?	Are	"Normal C	ircumstances" pre	sent? Yes	X No	_
Are Vegetation,Soil	or Hydrology	naturally probl	lematic?	(If neede	ed, explain	any answers in Re	emarks.)		
SUMMARY OF FINDINGS-A	Attach eita man eh	owina samnli	na noint loca	tions tran	socts in	nnortant featu	iras atc		
Hydrophytic Vegetation Present?	Yes X	No	ng ponit ioca	lions, tran	13 0 013, 111	iiportant leatu	ii e s, e i c.		-
Hydric Soil Present?	Yes X	No		Is the Samp	oled Area				
Wetland Hydrology Present?	Yes X	No		Within a W		Yes	X No		
	100 <u>X</u>			***************************************	otiuiiu.				
Remarks: Tidal E2EM Wetland Wetland lat and long were taken app	proximately in the middl	e of the wetland (n	ot soil bore locati	on)					
This wetland is located to the south	of I-64 within tidal water	rs							
HADBOI OCA									_
HYDROLOGY Wetland Hydrology Indicators:					Secor	ndary Indicators (n	ninimum of two req		_
Primary Indicators (minimum of one	is required: check all th	at annly)				Surface Soil Crac		uncuj	-
X Surface Water (A1)		uatic Fauna (B13)					ed Concave Surfac	e (B8)	
X High Water Table (A2)		rl Deposits (B15)	(I RR II)		_	Drainage Patterns		C (DO)	
X Saturation (A3)		drogen Sulfide Odd	•		_	Moss Trim Lines			
Water Marks (B1)		dized Rhizosphere		s (C3)	_	Dry-Season Wate			
Sediment Deposits (B2)		sence of Reduced	=	- ()		Crayfish Burrows			
Drift Deposits (B3)		cent Reduction in				•	on Aerial Imagery	(C9)	
Algal Mat or Crust (B4)		n Muck Surface (C			_	Geomorphic Posit		()	
Iron Deposits (B5)		ner (Explain in Rem			_	Shallow Aquitard			
X Inundation Visible on Aerial Im			,			FAC-Neutral Test			
X Water-Stained Leaves (B9)						Sphagnum moss			
Field Observations:									-
Surface Water Present? Yes	X No	Depth (inches):	2"					
Water Table Present? Yes	X No	Depth (inches	·	0"					
Saturation Present? Yes	X No	Depth (inches	·	0"	Wetland H	lydrology Presen	t? Yes	X No	
(includes capillary fringe)						, 0,	_		
Describe Recorded Data (stream ga	auge, monitoring well, ac	erial photos, previo	ous inspections), i	f available:					_
Remarks:									_
remarks.									

Project/Site:	I-64 /High Rise Brid	ge Corridor Stu	udy	
			•	Sampling date: 2/3/2014
				Sampling point: WL-29, 30
Vegetation (Four Strata) - U				
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1	<u> </u>			That are OBL, FACW, or FAC: (A)
2				Total number of Dominant
				Species across All Strata: 2 (B)
3				
, 				Percent of Dominant Species
4				That are OBL, FACW, or FAC: 100% (A/B)
T	F00/ (1.1.1	-00/		
Total Cover: 0	50% of total cover	0%		Describer as In described acts
O	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)	<u> </u>			Total % Cover of Multiply by:
1				OBL species x 1 =
	<u> </u>			FACW species x 2 =
2	<u> </u>			FAC species x 3 =
				FACU species x 4 =
3				UPL species x 5 =(D)
				Column Totals: (A) (B)
4	<u> </u>			Prevalence Index = B/A =
	<u> </u>			
5	<u> </u>			Hydrophytic Vegetation Indicators:
Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
Total Cover.				
	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
Spartina alterniflora	50	Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data
Saltwater Cord Grass				and Remarks or on a separate sheet)
2. Phragmites australis	30	Y	FACW	Problematic Hydrophytic Vegetation¹ (Explain)
Common Reed				
3. Juncus roemerianus	15	N	OBL	
Roemer's Rush	<u> </u>			41 12 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
4	<u> </u>			¹Indicators of hydric soil and wetland hydrology must
5.				be present Definitions of Four Vegetation Strata:
5.				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.				diameter at breast height (DBH), regardless of height.
o				diameter at breast neight (DBH), regardless of height.
Total Cover: 95	50% of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than
Total Cover. 95	20% of total cover	19%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()	2070 01 10101 00701	1370		on. Dorrand greater than 3.20 ft (fin) tail.
1				Herb - All herbaceous (non-woody) plants, regardless of size,
··				and woody plants less than 3.28 ft tall.
2.				and woody planto loop than 0.20 it tall.
				Woody Vine - All woody vines greater than 3.28 ft in height.
3.				Troody Time 7 in Woody Times greater than 6.20 ft in Height.
				
4.				Hydrophytic
				Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
	20% of total cover	0%		
Remarks: (Include photo nun				
` '	'	,		Herb (5-ft radius)
		Trees and V	/inos	
		(30-ft radi	usj	
	r			
		Sapling/Shr	ub	
		(15-ft radiu		
	l	•		

Project/Site: I-64 /High Rise Bridge Corridor Study

Depth Matrix			Redox Fe	atures	he absence		
inches) Color (moist)	% Co	lor (moist)	%	Type ¹	Loc2	Texture	Remarks
12+ 10YR 3/1	100					loam	many roots
		 -					
/pe: C=Concentration, D=Depletion,	RM=Reduced Ma	trix MS=Masl	ked Sand G	irains		²l ocation: PI =Po	ore Lining, M=Matrix.
dric Soil Indicators: (Applicable t					Indicator	s for Problematic Hy	<u>.</u>
_ Histosol (A1)	_		•	ce (S8) (LRR	S, T, U)	1cm Muck (A9)	(LRR O)
Histic Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U)	2cm Muck (A10)	(LRR S)
Black Histic (A3)		Loamy Muc	ky Mineral (F1) (LRR O)		Reduced Vertic (F18) (outside MLRA 150A,B)
Hydrogen Sulfide (A4)		Loamy Gley	ed Matrix (F	=2)		Piedmont Floodp	olain Soils (F19) (LRR P, S, T)
Statified Layers (A5)	X	Depleted Ma	atrix (F3)			Anomalous Brigh	nt Loamy Soils (F20)
Organic Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6	5)		(MLRA 153B)	
_ 5 cm Mucky Mineral (A7) (LRR P	P, T, U)	Depleted Da	ark Surface	(F7)		Red Parent Mate	rial (TF2)
Muck Presence (A8) (LRR U)		Redox Depr	ressions (F8	3)		Very Shallow Da	rk Surface (TF12) (LRR T, U)
1cm Muck (A9) (LRR P, T)		Marl (F10) (LRR U)			Other (Explain in	Remarks)
Depleted Below Dark Surface (A1	11)	Depleted Or	chric (F11)	(MLRA 151)			
Thick Dark Surface (A12)		Iron-Mangar	nese Masse	es (F12) (LRR	O, P, T)	3Indicators of hyd	Irophytic vegetation and
Coastal Prairie Redox (A16) (ML	.RA 150A)	Umbric Surf	face (F13)	(LRR P, T, U)		wetland hydrolog	y must be present,
Sandy Mucky Mineral (S1) (LRR,	, O, S)	Delta Ochrid	c (F17) (ML	-RA 151)		unless disturbed	or problematic
Sandy Gleyed Matrix (S4)		Reduced Ve	ertic (F18) ((MLRA 150A,	150B)		
Sandy Redox (S5)		Piedmont F	loodplain So	oils (F19) (ML	.RA 149A)		
Stripped Matrix (S6)		Anomalous	Bright Loan	ny Soils (F20)	(MLRA 149	A, 153C, 153D)	
Dark Surface (S7) (LRR P, S, T,	U)						
estrictive Layer (if observed):							
Type:							
Depth (inches):					Hydric So	ils Present?	YES X No
							

Project/Site: I-64 /High Rise Brid	lge Corridor Study	City/Count	y: City of Che	esapeake		Sampling Date:	2/3/2014
Applicant/Owner: VDOT				State: \	<u>VA</u>	Sampling Point:	WL-31, 32
Investigator(s): Glenn Wilson ar	nd David Kwasniewsł	Section, T	ownship, Range:	: <u> </u>			
	tidal floodplain		f (concave, conv		one	Slope (%):	0-1%
Subregion (LRR or MLRA): LRR T		Lat: 36° 45′ 39.	<u>10"</u> Lo	ong: 76° 18′ 20.3	33"	Datum:	WGS 84
Soil Map Unit Name: Udorthents-U	Jrban land complex				NWI classification	n: <u>E2EM1P</u>	and E2USN
Are climatic / hydrologic conditions on	the site typical for this time	ne of year?	Yes X No	(If	f no, explain in Re	emarks.)	
Are Vegetation,Soil,	or Hydrology	significantly disturbed?	Are	"Normal Circumsta	nces" present?	Yes X	No
Are Vegetation,Soil,	or Hydrology	naturally problematic?	(If need	ed, explain any ansv	wers in Remarks.)	
SUMMARY OF FINDINGS-At	tach site map show	ing sampling point lo	cations, tran	sects, importa	nt features, e	etc.	
Hydrophytic Vegetation Present?		No			•		
Hydric Soil Present?		No	Is the Sam	pled Area			
Wetland Hydrology Present?		No	Within a W	/etland?	Yes X	No	
Remarks: Tidal E2EM Wetland Wetland lat and long were taken appr This wetland is located to the north of This wetland is located adjacent to Ph	f I-64 within tidal waters	,	ation)				
HYDROLOGY							
Wetland Hydrology Indicators:				Secondary Ind	licators (minimum	of two required	(k
Primary Indicators (minimum of one is	s required; check all that a	pply)		Surface	Soil Cracks (B6)		
Surface Water (A1)	Aquatio	Fauna (B13)		Sparsely	Vegetated Cond	ave Surface (B	3)
X High Water Table (A2)	Marl De	eposits (B15) (LRR U)		Drainage	e Patterns (B10)		
X Saturation (A3)	X Hydrog	en Sulfide Odor (C1)		Moss Tr	im Lines (B16)		
Water Marks (B1)	Oxidize	d Rhizospheres on Living Ro	oots (C3)	Dry-Sea	son Water Table	(C2)	
Sediment Deposits (B2)	Presen	ce of Reduced Iron (C4)		Crayfish	Burrows (C8)		
Drift Deposits (B3)	Recent	Reduction in Tilled Soils (C6	5)	Saturation	on Visible on Aeri	ial Imagery (C9)	
Algal Mat or Crust (B4)	Thin M	uck Surface (C7)		X Geomor	phic Position (D2)	
Iron Deposits (B5)		Explain in Remarks)			Aquitard (D3)		
X Inundation Visible on Aerial Ima	agery (B7)				utral Test (D5)		
X Water-Stained Leaves (B9)				Sphagnu	um moss (D8) (Li	RR T, U)	
Field Observations:							
Surface Water Present? Yes	No X	Depth (inches):	-				
Water Table Present? Yes		Depth (inches):	0"				
Saturation Present? Yes	X No	Depth (inches):	0"	Wetland Hydrolog	ıv Present?	Yes X	No
(includes capillary fringe)		2004 (,,	<u>/\</u>	
Describe Recorded Data (stream gau	ige, monitoring well, aerial	photos, previous inspections), if available:				
3	3., 3 . ,	,,	,,				
Remarks:							

Project/Site:	I-64 /High Rise Brid	ge Corridor Stu	udy	
			•	Sampling date: 2/3/2014
				Sampling point: WL-31, 32
Vegetation (Four Strata) - U				
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1	<u> </u>			That are OBL, FACW, or FAC: 3 (A)
	_			Total number of Dominant
2.	_			
3.				Species across All Strata: 3 (B)
3.				Percent of Dominant Species
4.		· -		That are OBL, FACW, or FAC: 100% (A/B)
T				111dt die GBL, 17tGW, 6117tG
Total Cover: 0	50% of total cover	0%		
rotal Coroll	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1.				OBL species x 1 =
				FACW species x 2 =
2.				FAC species x 3 =
				FACU species x 4 =
3.				UPL species x 5 =
		·		Column Totals: (A) (B)
4.				Prevalence Index = B/A =
_				
5	<u> </u>			
=	— 			Hydrophytic Vegetation Indicators:
Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0¹
Spartina patens	80	<u> </u>	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Salt-Meadow Cord Grass				and Remarks or on a separate sheet)
Juncus roemerianus	15	<u> </u>	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
Roemer's Rush				
3. Distichlis spicata Coastal Salt Grass	15	<u> </u>	OBL	
4.				¹ Indicators of hydric soil and wetland hydrology must
4.				be present
5.		· -		Definitions of Four Vegetation Strata:
·				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.				diameter at breast height (DBH), regardless of height.
·				,,, .,,, .,,,
Total Cover: 110	50% of total cover	55%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	22%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()	<u></u>			
1.				Herb - All herbaceous (non-woody) plants, regardless of size,
				and woody plants less than 3.28 ft tall.
2				
-				Woody Vine - All woody vines greater than 3.28 ft in height.
3	<u> </u>			
4				Hydrophytic
T-t-I C	F00/ -f1-1-1	00/		Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
Remarks: (Include photo nur	20% of total cover	0%		
Remarks. (include prioto nui	libers here or on a sepa	rate sneet.)		Herb (5-ft radius)
		Trees and V		
		(30-ft radi	us)	
		Sapling/Shr	uh	
		(15-ft radiu		
		(13-11 ladiu	ارد	

Soil								
Profile Des	scription: (Describe to the	depth need	ed to document tl	ne indicator	or confirm th	e absence o	f indicators.)	
Depth	Matrix			Redox Fea	itures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-4	10YR 4/1	100					loam	many roots
4-12+	10YR 4/1	100		_			loam	few roots
4-12-	10113 4/1	100					IUaiii	1ew 100ts
	· 							
	·							
¹Type: C=C	Concentration, D=Depletion,	RM=Reduce	ed Matrix, MS=Mas	ked Sand Gra	ains.		² Location: PL=Po	re Lining, M=Matrix.
Hydric Soi	I Indicators: (Applicable t	to all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hyd	ric Soils³:
Histos	sol (A1)		Polyvalue E	Below Surface	(S8) (LRR S	S, T, U)	1cm Muck (A9) (LRR O)
Histic	Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U)	_	2cm Muck (A10)	(LRR S)
Black	Histic (A3)		Loamy Muc	ky Mineral (F	1) (LRR O)		Reduced Vertic (F	18) (outside MLRA 150A,B)
	gen Sulfide (A4)			ed Matrix (F2		_		ain Soils (F19) (LRR P, S, T)
	ed Layers (A5)		X Depleted M	•	,	_		Loamy Soils (F20)
	nic Bodies (A6) (LRR P, T,	U)		Surface(F6)		_	(MLRA 153B)	. 200, 00 (1 20)
	Mucky Mineral (A7) (LRR F	-		ark Surface (Red Parent Mater	ial (TF2)
		, 1, 0,		ressions (F8)	•	_	_	k Surface (TF12) (LRR T, U)
	Presence (A8) (LRR U)			` '		_		, , , , , ,
	Muck (A9) (LRR P, T)	44)	Marl (F10) (MI DA 454)	_	Other (Explain in	Remarks)
	ted Below Dark Surface (A	11)		chric (F11) (•		21 11 1 11 1	
	Dark Surface (A12)				(F12) (LRR (J, P, 1)	•	rophytic vegetation and
	tal Prairie Redox (A16) (ML	•		face (F13) (L			wetland hydrology	•
	Mucky Mineral (S1) (LRR	, O, S)		c (F17) (MLF	=		unless disturbed	or problematic
Sandy	y Gleyed Matrix (S4)		Reduced V	ertic (F18) (N	/ILRA 150A, 1	I50B)		
Sandy	y Redox (S5)		Piedmont F	Toodplain Soi	ls (F19) (ML I	RA 149A)		
Stripp	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	i, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)						
Restrictive	Layer (if observed):							
Type:								
Depth ((inches):					Hydric Soil	s Present?	rES X No
	· · · · · ·					-		<u> </u>
Remarks:	Soil saturated from the surf	ace						

Project/Site: I-64 /High Rise Bridg	ge Corridor Study	<u>'</u>	City/County:	City of Che	esapeake	9	Samplir	ng Date:		2/3/2014
Applicant/Owner: VDOT						State: VA	Samplin	ng Point:	WL-33	
Investigator(s): Glenn Wilson and	d David Kwasnie	wski	Section, Town	nship, Range:	·					
· · · · · · · · · · · · · · · · · · ·	idal floodplain		Local relief (c			none	Slope	€ (%):	0-1%	
Subregion (LRR or MLRA): LRR T		Lat:	36° 45' 35.16'	<u>'</u> Lo	ong: <u>76°</u>	18' 24.57"		ıtum:	WGS 8	
Soil Map Unit Name: Udorthents-U	Irban land comple	ex				NWI class	sification: <u>E2</u>	<u> 2EM1P</u>	and PF	O4S
Are climatic / hydrologic conditions on	the site typical for this	s time of year?	Ye	s X No		(If no, expla	in in Remarks	.)		
Are Vegetation,Soil,c	or Hydrology	significantly dis	sturbed?	Are	"Normal C	ircumstances" pre	sent? Yes	Χ	No	
Are Vegetation,Soil,c	or Hydrology	naturally proble	ematic?	(If neede	ed, explain	any answers in Re	marks.)			
SUMMARY OF FINDINGS-Att	tach site map sh	owing samplir	ng point loca	tions, tran	sects, in	nportant featu	res, etc.			
Hydrophytic Vegetation Present?	Yes X	No				•	·		-	
Hydric Soil Present?	Yes X	No		Is the Samp	pled Area					
Wetland Hydrology Present?	Yes X	No		Within a W	etland?	Yes	X No	·		
Remarks: Tidal E2EM5 Wetland (<i>Phra</i> Wetland lat and long were taken approximate This wetland is located to the north of Wetland is located in the upper tidal ar	oximately in the middle I-64 within tidal water	e of the wetland (no	ot soil bore location	on)						
HYDROLOGY										
Wetland Hydrology Indicators:					Secor	ndary Indicators (m	ninimum of two	require	d)	
Primary Indicators (minimum of one is	required; check all th	at apply)				Surface Soil Cracl	ks (B6)			
Surface Water (A1)	Aqı	uatic Fauna (B13)				Sparsely Vegetate	ed Concave Su	ırface (B	8)	
X High Water Table (A2)	Ma	rl Deposits (B15) (LRR U)			Drainage Patterns	(B10)			
X Saturation (A3)	Hyd	drogen Sulfide Odo	r (C1)			Moss Trim Lines (B16)			
Water Marks (B1)	Oxi	dized Rhizosphere	s on Living Roots	s (C3)		Dry-Season Wate	r Table (C2)			
Sediment Deposits (B2)	Pre	sence of Reduced	Iron (C4)			Crayfish Burrows	(C8)			
Drift Deposits (B3)	Rec	cent Reduction in T	illed Soils (C6)			Saturation Visible	on Aerial Imag	jery (C9))	
Algal Mat or Crust (B4)	Thi	n Muck Surface (C	7)		X	Geomorphic Posit	ion (D2)			
Iron Deposits (B5)	Oth	er (Explain in Rem	arks)			Shallow Aquitard (D3)			
X Inundation Visible on Aerial Imag	gery (B7)				X	FAC-Neutral Test	(D5)			
X Water-Stained Leaves (B9)						Sphagnum moss ((D8) (LRR T, L	J)		
Field Observations:										
Surface Water Present? Yes	No X	Depth (inches)		_						
Water Table Present? Yes	X No	Depth (inches)		4"						
Saturation Present? Yes	X No	Depth (inches)		4"	Wetland H	Hydrology Presen	t? Yes	Х	No	
(includes capillary fringe)		., ,	-			,			_	
Describe Recorded Data (stream gaug	ge, monitoring well, as	erial photos, previou	us inspections), i	f available:						
Remarks:										

Project/Site:		I-64 /High Rise Bridg	ge Corridor St	udy	
, <u>–</u>		<u> </u>		•	Sampling date: 2/3/2014
Vegetation (Four	Strata) - Use	scientific names of	nlants		Sampling point: WL-33
vegetation (i our	Oliata) - Osc	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plo	t sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1					That are OBL, FACW, or FAC:1(A)
2.					Total number of Dominant
		<u> </u>			Species across All Strata: 1 (B)
3.					
4.					Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)
4					That are OBL, FACW, or FAC:100%(A/B)
Total Cover:	0	50% of total cover	0%		
0 11 /01 1 04	(6)	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Str. 1.	atum (ft)				Total % Cover of Multiply by: OBL species x 1 =
		_			FACW species x 2 =
2.					FAC species x 3 =
					FACU species x 4 =
3					UPL species x 5 =(A) (B)
4.					Prevalence Index = B/A =
-					
5					H. Land C. Vanda Carlo Parter
Total Cover:	0	50% of total cover	0%		Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation
Total Covol.	Ü	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()		_			3 - Prevalence Index is ≤3.0 ¹
1. Phragmites au		95	<u> </u>	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Common Ree 2.	d				and Remarks or on a separate sheet) Problematic Hydrophytic Vegetation¹ (Explain)
					Problematic Hydrophytic Vegetation (Explain)
^					
4					Indicators of hydric soil and wetland hydrology must be present
5.					Definitions of Four Vegetation Strata:
					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6					diameter at breast height (DBH), regardless of height.
Total Cover:	95	50% of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than
Total Cover.	00	20% of total cover	19%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratu	ım ()	_			
1					Herb - All herbaceous (non-woody) plants, regardless of size,
2.					and woody plants less than 3.28 ft tall.
					Woody Vine - All woody vines greater than 3.28 ft in height.
3					
4.					Hydrophytic
T					Vegetation
Total Cover:	0	50% of total cover	0%		Present? Yes X No
Demonstrat /Include		20% of total cover	0%		
		ers here or on a separ ested . Tree species a		water oak ar	nd loblolly pine Herb (5-ft radius)
The mige of the v	vollaria io rore	7010d : 1100 opooloo d	iro roa mapio,	water can a	is issuen, pino
			Trees and \	/ines	
			(30-ft radi		
		_			
			Sapling/Shr	ub	
			(15-ft radiu		
		L			

Project/Site:	L64 /High Rice	Bridge Corridor Study
rioject/Site.	1-04 / MIGH KISE	: Dilage Collian Study

c	_	:1
J	u	•

D. CL. D.		1					C' Proton	
	cription: (Describe to the	aeptn need	ea to aocument t			ne absence o	indicators.)	
Depth	Matrix			Redox Fe	atures			
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-3	10YR 3/1	100					silt loam	
3-8	10YR 7/1	40	10YR 3/4	20			sand	
	10YR 7/2	40					sand	
8-16+	10YR 5/1	100					sand	saturated (wet)
	-							-
	oncentration, D=Depletion,		·		rains.		² Location: PL=Por	e Lining, M=Matrix.
Hydric Soil	Indicators: (Applicable t	to all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydr	ric Soils³:
Histoso	ol (A1)		Polyvalue E	Below Surfac	e (S8) (LRR	S, T, U)	1cm Muck (A9) (L	RR O)
Histic I	Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U		2cm Muck (A10) (LRR S)
Black I	Histic (A3)		Loamy Mud	ky Mineral (l	F1) (LRR O)		Reduced Vertic (F	18) (outside MLRA 150A,B)
Hydrog	gen Sulfide (A4)		Loamy Gle	yed Matrix (F	⁻ 2)		Piedmont Floodpla	nin Soils (F19) (LRR P, S, T)
Statifie	ed Layers (A5)		X Depleted M	latrix (F3)		_	Anomalous Bright	Loamy Soils (F20)
Organi	ic Bodies (A6) (LRR P, T,	U)	Redox Darl	s Surface(F6	5)		(MLRA 153B)	
5 cm N	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface	(F7)		Red Parent Materi	al (TF2)
Muck F	Presence (A8) (LRR U)		Redox Dep	ressions (F8	3)		Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm M	luck (A9) (LRR P, T)		Marl (F10)	(LRR U)			Other (Explain in F	Remarks)
X Deplet	ed Below Dark Surface (A	11)	Depleted O	chric (F11)	(MLRA 151)		<u> </u>	
Thick [Dark Surface (A12)		Iron-Manga	nese Masse	s (F12) (LRR	O, P, T)	3Indicators of hydro	ophytic vegetation and
Coasta	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Sur	face (F13) (LRR P, T, U)		wetland hydrology	must be present,
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (ML	.RA 151)		unless disturbed o	r problematic
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18) (MLRA 150A,	150B)		•
	Redox (S5)		Piedmont F	loodplain Sc	oils (F19) (ML	.RA 149A)		
	ed Matrix (S6)				. , .	•	A, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)	_	3	, (-,	•	,,,	
	Layer (if observed):	-,						
Type:								
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
Depth (i	nches).					Hydric Soil	s Present? Y	ES X No
Boptii (i	1101100).					nyano con		<u> </u>
Remarks: S	Soil saturated from 4"+ belo	ow soil surfac	e e					

Project/Site: I-64 /High Rise Brid	dge Corridor Study	У	City/County:	City of Che			Sampling	Date:	2/3/2014
Applicant/Owner: VDOT						State: VA	Sampling	Point: WL-34	
Investigator(s): Glenn Wilson a		wski	Section, Tow						
	tidal floodplain		Local relief (c			none	Slope (9		
Subregion (LRR or MLRA): LRR			36° 45′ 33.38	<u> </u>	ong: <u>76° 1</u>	8' 35.25"	Datur		84
Soil Map Unit Name: Udorthents-						NWI class		M1P	
Are climatic / hydrologic conditions o	* * * * * * * * * * * * * * * * * * * *	-	Ye				ain in Remarks.)		
· · · · · · · · · · · · · · · · · · ·	,or Hydrology					rcumstances" pre		X No _	
Are Vegetation,Soil	or Hydrology	naturally probl	lematic?	(If neede	ed, explain a	any answers in Re	emarks.)		
SUMMARY OF FINDINGS-A	ttach site map sh	owing sampli	ng point loca	tions. tran	sects. in	nportant featu	ıres. etc.		
Hydrophytic Vegetation Present?	Yes X	No	J p	, , , , , , , , , , , , , , , , , , , ,	,		,		
Hydric Soil Present?	Yes X	No		Is the Samp	oled Area				
Wetland Hydrology Present?	Yes X	No		Within a W		Yes	X No		
Remarks: Tidal E2EM5 Wetland (<i>Ph</i> Wetland lat and long were taken app This wetland is located to the north o	roximately in the midd	le of the wetland (n	ot soil bore locati	on)					
HYDROLOGY									
Wetland Hydrology Indicators:					Secon	dary Indicators (n	ninimum of two re	quired)	
Primary Indicators (minimum of one	is required; check all the	nat apply)				Surface Soil Crac	ks (B6)		
Surface Water (A1)	Aq	uatic Fauna (B13)				Sparsely Vegetate	ed Concave Surfa	ice (B8)	
X High Water Table (A2)		rl Deposits (B15)	-		X	Drainage Patterns	s (B10)		
X Saturation (A3)		drogen Sulfide Odo				Moss Trim Lines (
X Water Marks (B1)		idized Rhizosphere	-	s (C3)		Dry-Season Wate			
Sediment Deposits (B2)		esence of Reduced				Crayfish Burrows			
X Drift Deposits (B3)		cent Reduction in			_	Saturation Visible		y (C9)	
Algal Mat or Crust (B4)		in Muck Surface (C				Geomorphic Posit			
Iron Deposits (B5)		ner (Explain in Ren	narks)			Shallow Aquitard			
X Inundation Visible on Aerial Im	agery (B7)					FAC-Neutral Test			
X Water-Stained Leaves (B9)						Sphagnum moss	(D8) (LRR 1, U)		
Field Observations:									
Surface Water Present? Yes	No X	Depth (inches): 	-					
Water Table Present? Yes	X No	Depth (inches): 	2"					
Saturation Present? Yes	X No	Depth (inches	i):	2"	Wetland H	lydrology Presen	t? Yes _	X No	
(includes capillary fringe)									
Describe Recorded Data (stream gar	uge, monitoring well, a	erial photos, previo	ous inspections), i	f available:					
Remarks:									

	Project/Site:	I-64 /High Rise Bridg	ge Corridor St	udy	
					Sampling date: 2/3/2014
					Sampling point: WL-34
۷e	getation (Four Strata) - Use	scientific names of	plants.		
		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	e Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.					That are OBL, FACW, or FAC: 2 (A)
2.					Total number of Dominant
					Species across All Strata: 2 (B)
3.					(',
					Percent of Dominant Species
4.	-	 _			That are OBL, FACW, or FAC: 100% (A/B)
••					111at are 652, 171611, 611716. <u>10076</u> (715)
	Total Cover: 0	50% of total cover	0%		
	Total Gover.	20% of total cover	0%		Prevalence Index worksheet:
٥,	oling /Shrub Stratum (ft)	2070 Of total cover	070		
3a 1.			Y	FAC	Total % Cover of Multiply by: OBL species
١.				FAC	
_	Groundseltree				
2.					FAC species x 3 =
_					FACU species x 4 =
3.					UPL species x 5 =(D)
					Column Totals:(A)(B)
4.					Prevalence Index = B/A =
	1	_			
5					
					Hydrophytic Vegetation Indicators:
	Total Cover: 2	50% of total cover	1%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	0%		X 2 - Dominance Test is >50%
Не	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Phragmites australis	80	Y	FACW	4 - Morphological Adaptations ¹ (Provide supporting data
	Common Reed				and Remarks or on a separate sheet)
2.	Spartina patens		N	FACW	Problematic Hydrophytic Vegetation¹ (Explain)
	Salt-Meadow Cord Grass				· · · · · · · · · · · · · · · · · · ·
3.	Spartinia alterniflora		N	OBL	
٥.	Saltwater Cord Grass				
4.		_			¹ Indicators of hydric soil and wetland hydrology must
٠.					be present
5.					Definitions of Four Vegetation Strata:
Ο.	-				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.				-	diameter at breast height (DBH), regardless of height.
Ο.		_			diameter at breast height (DBH), regardless of height.
	Total Cayor: 00	FOO/ of total cover	450/		Sanling (Shrub - Woody plants, evaluding vines, loss than
	Total Cover: 90	50% of total cover	45%		Sapling /Shrub - Woody plants, excluding vines, less than
١٨/-	and () /in a Ctratum ()	20% of total cover	18%		3in. DBH and greater than 3.28 ft (1m) tall.
	ody Vine Stratum ()				Hank All bank assure (as a susada) alsota na asadisas at sisa
1.					Herb - All herbaceous (non-woody) plants, regardless of size,
_					and woody plants less than 3.28 ft tall.
2.		<u> </u>			
_					Woody Vine - All woody vines greater than 3.28 ft in height.
3.	-	_			
	1	_			
4.					Hydrophytic
					Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
		20% of total cover	0%		
Re	marks: (Include photo numb	ers here or on a sepai	rate sheet.)		11 1 (5 (1 1)
					Herb (5-ft radius)
			T	/:	
			Trees and \		
			(30-ft radi	ius)	
		'			
			Sapling/Shr	ub	
			(15-ft radiu	15)	
		L			

Project/Site: I-64 /High Rise Bridge Corridor Study

Soil											
Profile Des	cription: (Describe to the	depth need	ed to document tl	ne indicator	or confirm th	e absence o	f indicators.)				
Depth	Matrix			Redox Fea	atures						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks			
0-2	10YR 4/2	100					fine silt loam				
2-16+	10YR 4/1	100					loamy sand				
2 101	101111 4/1	100					loanly sand				
								_			
					 						
- ''	oncentration, D=Depletion,		,		ains.		² Location: PL=Pore Lir	<u> </u>			
*	Indicators: (Applicable t	to all LRRs, i		,			for Problematic Hydric S				
Histos	ol (A1)		Polyvalue E	Below Surface	e (S8) (LRR S	S, T, U)	1cm Muck (A9) (LRR	0)			
Histic	Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U)	_	2cm Muck (A10) (LRF	RS)			
_	Histic (A3)		Loamy Muc	ky Mineral (F	1) (LRR O)	_		(outside MLRA 150A,B)			
Hydro	gen Sulfide (A4)		Loamy Gley	ed Matrix (F	2)	_	Piedmont Floodplain S	oils (F19) (LRR P, S, T)			
Statifie	ed Layers (A5)		X Depleted M	atrix (F3)		_	Anomalous Bright Loa	my Soils (F20)			
Organ	ic Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6))		(MLRA 153B)				
5 cm N	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface ((F7)	_	Red Parent Material (T	F2)			
Muck I	Presence (A8) (LRR U)		Redox Dep	ressions (F8))		Very Shallow Dark Sui	face (TF12) (LRR T, U)			
1cm M	Muck (A9) (LRR P, T)		Marl (F10)	(LRR U)			Other (Explain in Rema	arks)			
Deplet	ted Below Dark Surface (A	11)	Depleted O	chric (F11) (MLRA 151)		_	·			
Thick I	Dark Surface (A12)	•	Iron-Manga	nese Masses	s (F12) (LRR (D, P, T)	3Indicators of hydrophy	rtic vegetation and			
_	al Prairie Redox (A16) (ML	RA 150A)			LRR P, T, U)						
_	Mucky Mineral (S1) (LRR	•		c (F17) (ML I			unless disturbed or pro	·			
	Gleyed Matrix (S4)	, •, •,		. , .	VLRA 150A, 1	50B)	amood alotalood of pro				
	Redox (S5)			. , ,	ils (F19) (MLI	•					
	ed Matrix (S6)			•	. , .	•	, 153C, 153D)				
	Surface (S7) (LRR P, S, T,	IIV	Anomalous	Diigiit Loain	y 30113 (1 20)	(MENA 143A	i, 1330, 133D)				
		0)			I						
_	Layer (if observed):										
Type:											
5											
Depth (i	inches):					Hydric Soil:	s Present? YES	<u>X</u> No			
	2 11										
Remarks: S	Soil saturated from 4"+ belo	ow soil surfac	е								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/3/2014 Applicant/Owner: VDOT State: VA Sampling Point: WL-35, 36 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Slope (%): 0-1% Local relief (concave, convex, none): none Subregion (LRR or MLRA): LRR T 36° 45′ 30.76″ Long: 76° 18' 31.25" Datum: WGS 84 Soil Map Unit Name: Udorthents-Urban land complex, Wando loamy fine sand, and NWI classification: N/A Dragston fine sandy loam Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) Are Vegetation ______,Soil ______,or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ____,Soil _____,or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? No Hydric Soil Present? No Is the Sampled Area Wetland Hydrology Present? No Within a Wetland? Remarks: Tidal E2EM5 Wetland (Phragmites australis dominant) Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the south of I-64 within tidal waters **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Marl Deposits (B15) (LRR U) Χ High Water Table (A2) Drainage Patterns (B10) Hydrogen Sulfide Odor (C1) Χ Saturation (A3) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) X Water-Stained Leaves (B9) Sphagnum moss (D8) (LRR T, U) Field Observations: X No X No No Surface Water Present? Depth (inches): 0" 0" Water Table Present? Depth (inches): 0' Saturation Present? Depth (inches): Wetland Hydrology Present? Yes X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Water is at the soil surface

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
•			•	Sampling date: 2/3/2014
Vegetation (Four Strata) - U	lea caiantifia namas af	nlanto		Sampling point: WL-35, 36
vegetation (Four Strata) - C	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)		Species?	Status	Number of Dominant species
1. Pinus taeda	20	Y	FAC	That are OBL, FACW, or FAC: 3 (A)
Loblolly Pine				
2			-	Total number of Dominant
		. <u> </u>		Species across All Strata: 3 (B)
3				
		· ——		Percent of Dominant Species
4		· ——		That are OBL, FACW, or FAC: 100% (A/B)
Total Cover: 20	50% of total cover	10%	-	
Total Cover. 20	20% of total cover	4%	-	Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)	2070 01 10101 00001	470		Total % Cover of Multiply by:
1.			-	OBL species x 1 =
		·		FACW species x 2 =
2.				FAC species x 3 =
		· · · · · · · · · · · · · · · · · · ·		FACU species x 4 =
3.				UPL species x 5 =
				Column Totals: (A) (B)
4				Prevalence Index = B/A =
_				
5				
Total Cover: 0	50% of total cover	0%		Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation
Total Cover: 0	20% of total cover			x 2 - Dominance Test is >50%
Herb Stratum ()	20% of total cover	0%		3 - Prevalence Index is ≤3.01
Herb Stratum () 1. Phragmites australis	90	Y	FACW	
Common Reed			TACW	and Remarks or on a separate sheet)
2.		· ——		Problematic Hydrophytic Vegetation ¹ (Explain)
				1 robicinatio riyarophytic vegetation (Explain)
3.		· -	-	
4.		·		¹ Indicators of hydric soil and wetland hydrology must
				be present
5				Definitions of Four Vegetation Strata:
	<u> </u>			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
T + 10		450/		Continue (Charles Manufacture) and discussions a local three
Total Cover: 90	50% of total cover 20% of total cover	45% 18%	-	Sapling /Shrub - Woody plants, excluding vines, less than
Woody Vine Stratum ()	20% Of total Cover	10%	-	3in. DBH and greater than 3.28 ft (1m) tall.
Smilax rotundifolia	3	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
Horsebrier		·		and woody plants less than 3.28 ft tall.
2.				
			-	Woody Vine - All woody vines greater than 3.28 ft in height.
3.				
			-	
4		. <u> </u>		Hydrophytic
				Vegetation
Total Cover: 3	50% of total cover	2%		Present? Yes X No
Remarks: (Include photo nur	20% of total cover	1%		
Remarks. (include prioto nui	ilbers fiere or off a sepa	rate sneet.)		Herb (5-ft radius)
		- 13	<i>"</i>	
		Trees and \		
		(30-ft rad	ius)	
				17 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
		Sapling/Shr	ub	
		(15-ft radiu		

ject/Site: I-64 /High Rise Bridge Corridor Study

	Matrix			Redox Fe	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
)-3	10YR 3/1	100					loamy sand	
-7	10YR 5/1	100					sand	medium grain
-15+	10YR 6/1	50	10YR 4/6	50			sand	
	tti D. Dl-ti	DM Dadus	- d Matrice MC Mass	l O O			31ti DI D-	un Linium NA NAMANIN
•	oncentration, D=Depletion, Indicators: (Applicable)		•		rains.	Indicators	for Problematic Hyd	re Lining, M=Matrix.
Histos		to all LKKS,		•	e (S8) (LRR S		1cm Muck (A9) (I	
_	Epipedon (A2)				(LRR S, T, U)		2cm Muck (A10)	•
	Histic (A3)				ERR 3, 1, 0) F1) (LRR 0)	_		F18) (outside MLRA 150A,B)
_	gen Sulfide (A4)		Loamy Gley			_	-	
_ ' '	. ,				(2)	_		ain Soils (F19) (LRR P, S, T)
_	ed Layers (A5)	118	X Depleted M	, ,	`	_		Loamy Soils (F20)
_	ic Bodies (A6) (LRR P, T,	-		Surface(F6			(MLRA 153B)	:! (TEO)
	Mucky Mineral (A7) (LRR I	P, I, U)		ark Surface	` '	_	Red Parent Mater	,
_	Presence (A8) (LRR U)			ressions (F8)	_	_ ′	k Surface (TF12) (LRR T, U)
	fluck (A9) (LRR P, T)		Marl (F10) (_	Other (Explain in	Remarks)
	ted Below Dark Surface (A	11)		, ,	(MLRA 151)			
_	Dark Surface (A12)				s (F12) (LRR O	, P, T)	=	ophytic vegetation and
	al Prairie Redox (A16) (MI	-		, , ,	LRR P, T, U)		wetland hydrology	•
	Mucky Mineral (S1) (LRR	l, O, S)		c (F17) (ML	•		unless disturbed of	or problematic
Sandy	Gleyed Matrix (S4)		Reduced Ve	ertic (F18) (MLRA 150A, 1	50B)		
Sandy	Redox (S5)			•	oils (F19) (MLR	•		
O	ed Matrix (S6)		Anomalous	Bright Loan	ny Soils (F20) (MLRA 149A	A, 153C, 153D)	
Strippe		111						
	Surface (S7) (LRR P, S, T,	, 0)						
Dark S	Surface (S7) (LRR P, S, T, Layer (if observed):	, u)						
Dark S		, 0)						
Dark S		, 0)						
Dark S	Layer (if observed):	, 0)				Hydric Soil	ls Present?	/ES <u>X</u> No
Dark S estrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark S estrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark Sestrictive Type: Depth (i	Layer (if observed):					Hydric Soil	s Present?	/ES <u>X</u> No
Dark Sestrictive Type: Depth (i	Layer (if observed):					Hydric Soil	s Present?	/ES <u>X</u> No
Dark Sestrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark S estrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark S estrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark S estrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark Sestrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark Sestrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark Stestrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark Stestrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark Stestrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark S Restrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark S Restrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark Stestrictive Type: Depth (i	Layer (if observed):					Hydric Soil	ls Present?	/ES <u>X</u> No
Dark S Restrictive Type: Depth (i	Layer (if observed):					Hydric Soil	Is Present?	/ES <u>X</u> No
Dark S Restrictive Type: Depth (i	Layer (if observed):					Hydric Soil	Is Present?	/ES <u>X</u> No

Project/Site: I-64 /High Rise Brid	City/County: City of Chesapeake Sampling Date: 2/3/2							
Applicant/Owner: VDOT				State: VA	Sampling Point:	WL-37		
Investigator(s): Glenn Wilson an	nd David Kwasnie	wski	Section, Town	ship, Range:	: <u></u>	·		
Landform (hillslope, terrace, etc.):			Local relief (co			none		0-1%
Subregion (LRR or MLRA): LRR T		Lat:	36° 45' 31.38'	<u>'</u> Lo	ong: <u>76° 1</u>	18' 37.99"		WGS 84
Soil Map Unit Name: Water and U	dorthents-Urban	land complex				NWI classifi	cation: E2USN ar	nd E1UBL
Are climatic / hydrologic conditions on	the site typical for th	is time of year?	Yes	X No		(If no, explain	in Remarks.)	
Are Vegetation,Soil,	or Hydrology	significantly dis	sturbed?	Are	"Normal C	ircumstances" prese	nt? Yes X	No
Are Vegetation ,Soil ,	or Hydrology	naturally proble	ematic?	(If need	ed, explain	any answers in Rem	arks.)	
SUMMARY OF FINDINGS-At	tach site map sh	nowing samplir	ng point loca	tions, tran	sects, in	nportant feature	es, etc.	
Hydrophytic Vegetation Present?	Yes X	No						
Hydric Soil Present?	Yes X	No		Is the Samp	pled Area			
Wetland Hydrology Present?	Yes X	No		Within a W	letland?	Yes	X No	
Remarks: Tidal E2EM Wetland		<u> </u>						
Wetland lat and long were taken appro	oximately in the midd	le of the wetland (no	ot soil bore location	on)				
This wetland is located to the south of	•	,		,				
Rip rap was observed along the I-64 ((northside) embankme	ent						
LIVEROLOGY								
HYDROLOGY								
Wetland Hydrology Indicators:							imum of two required)	
Primary Indicators (minimum of one is						Surface Soil Cracks		
x Surface Water (A1)		uatic Fauna (B13)					Concave Surface (B8))
X High Water Table (A2)		arl Deposits (B15) (·			Drainage Patterns (E		
X Saturation (A3)		drogen Sulfide Odo				Moss Trim Lines (B1	,	
Water Marks (B1)		idized Rhizosphere	=	s (C3)	_	Dry-Season Water T		
X Sediment Deposits (B2)		esence of Reduced				Crayfish Burrows (C		
X Drift Deposits (B3)	Re	cent Reduction in T	illed Soils (C6)			Saturation Visible or	Aerial Imagery (C9)	
Algal Mat or Crust (B4)		in Muck Surface (C				Geomorphic Position		
Iron Deposits (B5)	Ot	her (Explain in Rem	arks)			Shallow Aquitard (D3		
Inundation Visible on Aerial Ima	igery (B7)					FAC-Neutral Test (D		
X Water-Stained Leaves (B9)						Sphagnum moss (Da	8) (LRR T, U)	
Field Observations:								
Surface Water Present? Yes	X No	Depth (inches)		0"				
Water Table Present? Yes	X No	Depth (inches)		0"				
Saturation Present? Yes	X No	Depth (inches)		0"	Wetland H	lydrology Present?	Yes X	No
(includes capillary fringe)	<u> </u>	Deptir (menes)			- Victiana i	rydrology i resent.	103 <u>X</u>	
Describe Recorded Data (stream gau	ge, monitoring well, a	erial photos, previou	us inspections), if	available:				
	go, mormornig tron, a	ona. p.10100, p.0110.	aoopoooo,,	aranabio.				
Remarks: inundation was observed in	n the middle of the w	atland but not the fri	nge					
Water is at the soil surface	in the initialic of the we	tiana bat not the ini	rige					

	Project/Site:	I-64 /High Rise Bridg	ge Corridor St	udy	
	•			•	Sampling date: 2/3/2014
					Sampling point: WL-37
Ve	getation (Four Strata) - Use	scientific names of	plants.		
		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	e Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.					That are OBL, FACW, or FAC: 3 (A)
		<u> </u>			
2.					Total number of Dominant
		_			Species across All Strata: 3 (B)
3.				-	(',
				-	Percent of Dominant Species
4.	-	<u> </u>		·	That are OBL, FACW, or FAC: 100% (A/B)
••		_			111at are 652, 171611, 611716. <u>10076</u> (715)
	Total Cover: 0	50% of total cover	0%	·	
	Total Gover.	20% of total cover	0%		Prevalence Index worksheet:
90	oling /Shrub Stratum (ft)	2070 01 10141 00701	070	-	Total % Cover of Multiply by:
	Morella cerifera		Y	FAC	OBL species x 1 =
١.				FAC	
_	Southern Bayberry				FACW species x 2 =
2.					FAC species x 3 =
_					FACU species x 4 =
3.					UPL species x 5 =(D)
					Column Totals:(A)(B)
4.					Prevalence Index = B/A =
5		_			
		_			Hydrophytic Vegetation Indicators:
	Total Cover: 2	50% of total cover	1%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	0%		x 2 - Dominance Test is >50%
Не	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Phragmites australis	35	<u> </u>	FACW	4 - Morphological Adaptations ¹ (Provide supporting data
	Common Reed				and Remarks or on a separate sheet)
2.	Spartina alterniflora	10	Y	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
	Saltwater Cord Grass	_			
3.		<u> </u>			
٠.	•				
4.		_			¹ Indicators of hydric soil and wetland hydrology must
٦.					be present
5.				-	Definitions of Four Vegetation Strata:
J.				-	Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
О.					diameter at breast neight (DBH), regardless of neight.
	Total Cayery 45	FOO/ of total acres	220/		Conling (Chrub - Woody plants, evaluding vines, less than
	Total Cover: 45	50% of total cover	23%		Sapling /Shrub - Woody plants, excluding vines, less than
	1. 17. 01. 1	20% of total cover	9%		3in. DBH and greater than 3.28 ft (1m) tall.
	ody Vine Stratum ()				
1.					Herb - All herbaceous (non-woody) plants, regardless of size,
_					and woody plants less than 3.28 ft tall.
2.	-				
		_			Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
		_			
4.		<u> </u>			Hydrophytic
		<u> </u>			Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
		20% of total cover	0%		
Re	marks: (Include photo numb	ers here or on a sepai	rate sheet.)		11 1 (5 6 1)
	s area has approximatley 40	Territoria de la companya della companya della companya de la companya della comp	,		Herb (5-ft radius)
		•			
			- IV	,	
			Trees and \		
			(30-ft radi	ius)	
			Camli: /C!		
			Sapling/Shr		
			(15-ft radiu	ıs)	
		L			

D!-		Di Daid Oid-	
;	t/Site: I-64/Hiq	n Rise Bridge Corrido	r St

Drefile Dec	cription: (Describe to the	double model		ha indiaatau		ha abaanaa a	of indicators \			
	• `	aeptn neea	ea to aocument ti			ne absence o	or indicators.)			
Depth	Matrix			Redox Fe						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks		
0-5							loam			
5-16+	10YR 4/1	100					loam			
¹Tvpe: C=Co	oncentration, D=Depletion,	RM=Reduce	ed Matrix. MS=Mas	ked Sand G	rains.		² Location: PL=Pore Lin	ing, M=Matrix.		
	Indicators: (Applicable t		•			Indicators	for Problematic Hydric S	<u> </u>		
Histose		u <u>-</u> o,			e (S8) (LRR		1cm Muck (A9) (LRR (
_	Epipedon (A2)				(LRR S, T, U	_	2cm Muck (A10) (LRR	-		
					-	' <u> </u>		=		
	Histic (A3)				F1) (LRR O)	_		(outside MLRA 150A,B)		
	gen Sulfide (A4)			ed Matrix (F	-2)	_		oils (F19) (LRR P, S, T)		
_	d Layers (A5)		X Depleted M	. ,		_	Anomalous Bright Loar	ny Soils (F20)		
_	c Bodies (A6) (LRR P, T,	-		k Surface(F6			(MLRA 153B)			
5 cm N	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface	(F7)	_	Red Parent Material (T	-		
Muck F	Presence (A8) (LRR U)		Redox Dep	ressions (F8	3)	_	Very Shallow Dark Surf	face (TF12) (LRR T, U)		
1cm M	uck (A9) (LRR P, T)		Marl (F10)	(LRR U)		_	Other (Explain in Rema	arks)		
X Deplet	ed Below Dark Surface (A	11)	Depleted O	chric (F11)	(MLRA 151)					
Thick [Dark Surface (A12)		Iron-Manga	nese Masse	s (F12) (LRR	O, P, T)	3Indicators of hydrophy	tic vegetation and		
Coasta	al Prairie Redox (A16) (ML	RA 150A)	Umbric Sur	face (F13) (LRR P, T, U)		wetland hydrology mus	t be present,		
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (ML						
	Gleyed Matrix (S4)				MLRA 150A,	150B)	•			
	Redox (S5)				oils (F19) (ML	=				
	ed Matrix (S6)				· , ·	,	A, 153C, 153D)			
		IIV		Diigitt Loan	ly 00113 (1 20)	(111211771777	A, 1000, 100D)			
	Surface (S7) (LRR P, S, T,	0)								
_	Layer (if observed):									
Type:										
Depth (i	nches):					Hydric Soi	Is Present? YES	<u>X</u> No		
Remarks: s	treaking was observed sta	rting at 7"+								

Project/Site: I-64 /High Rise Brid	City/County: City of Chesapeake Sampling Date:						2/3/2014		
Applicant/Owner: VDOT				State: VA	Sampling Point: WL-38				
Investigator(s): Glenn Wilson ar	nd David Kwasnie	ewski	Section, Town	nship, Range:	·				
· · · · · · · · · · · · · · · · · · ·	tidal floodplain		Local relief (c	,		none	Slope (%)		
Subregion (LRR or MLRA): LRR T	Γ	Lat:	36° 45′ 29.74′	<u>'</u> Lo	ong: <u>76° 1</u>	18' 14.41"	Datum:		34
Soil Map Unit Name: Udorthents-U	Urban land compl	ex				NWI class	sification: E1UB	BL and N/A	
Are climatic / hydrologic conditions or	n the site typical for th	is time of year?	Ye	s X No		(If no, expla	in in Remarks.)		
Are Vegetation,Soil	,or Hydrology	significantly dis	sturbed?	Are	"Normal Ci	ircumstances" pres	sent? Yes <u> </u>	XNo	
Are Vegetation,Soil	,or Hydrology	naturally proble	ematic?	(If neede	ed, explain a	any answers in Re	marks.)		
SUMMARY OF FINDINGS-A	ttach site map sl	nowing samplir	ng point loca	tions, tran	sects, in	nportant featu	res, etc.		
Hydrophytic Vegetation Present?	Yes X	No			·	•	·		-
Hydric Soil Present?	Yes X	No		Is the Samp	pled Area				
Wetland Hydrology Present?	Yes X	No		Within a W	etland?	Yes	X No		
Remarks: Tidal E2EM5 Wetland (<i>Phr</i> Wetland lat and long were taken appr This wetland is located to the south o This wetland is located at the upper fi	roximately in the midd of I-64 within tidal wate	lle of the wetland (no	ot soil bore location	on)					
HYDROLOGY									
Wetland Hydrology Indicators:					Secon	ndary Indicators (m	inimum of two requ	uired)	
Primary Indicators (minimum of one is	s required; check all t	hat apply)				Surface Soil Crack	ks (B6)		
Surface Water (A1)	Ac	quatic Fauna (B13)				Sparsely Vegetate	d Concave Surface	e (B8)	
X High Water Table (A2)	Ma	arl Deposits (B15) (LRR U)			Drainage Patterns	(B10)		
X Saturation (A3)	H _{>}	drogen Sulfide Odo	or (C1)			Moss Trim Lines (B16)		
Water Marks (B1)	O	kidized Rhizosphere	s on Living Roots	s (C3)		Dry-Season Water	r Table (C2)		
Sediment Deposits (B2)	Pr	esence of Reduced	Iron (C4)			Crayfish Burrows	(C8)		
Drift Deposits (B3)	Re	ecent Reduction in T	filled Soils (C6)			Saturation Visible	on Aerial Imagery	(C9)	
Algal Mat or Crust (B4)	Th	in Muck Surface (C	7)		X	Geomorphic Posit	ion (D2)		
Iron Deposits (B5)	Ot	her (Explain in Rem	narks)			Shallow Aquitard (D3)		
Inundation Visible on Aerial Ima	agery (B7)				X	FAC-Neutral Test	(D5)		
X Water-Stained Leaves (B9)						Sphagnum moss (D8) (LRR T, U)		
Field Observations:									
Surface Water Present? Yes	No X	Depth (inches)	١٠	_					
Water Table Present? Yes	X No	Depth (inches)		7"					
Saturation Present? Yes	X No	Depth (inches)		7"	Wetland H	lydrology Present	t? Yes	X No	
(includes capillary fringe)		.,. (,	<u> </u>			,			
Describe Recorded Data (stream gau	uge, monitoring well, a	erial photos, previou	us inspections), i	f available:					
Remarks:									

	Project/Site:	I-64 /High Rise Bride	ge Corridor St	udy	
	,			•	Sampling date: 2/3/2014
					Sampling point: WL-38
Ve	getation (Four Strata) - Use			1 . P	In the second se
Tro	oo Stratum (Plat sizes: ft)	Absolute % Cover	Dominant	Indicator	Dominance Test worksheet: Number of Dominant species
1.	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	That are OBL, FACW, or FAC: 3 (A)
١.					That are OBE, 1710W, 011710.
2.					Total number of Dominant
					Species across All Strata:3(B)
3.					
					Percent of Dominant Species
4.					That are OBL, FACW, or FAC: 100% (A/B)
	Total Cover: 0	50% of total cover	0%		
	Total Cover.	20% of total cover	0%		Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)	2070 0. 1010. 0070.	0,70		Total % Cover of Multiply by:
1.		10	Υ	FACW	OBL species x 1 =
	Jesuit's-Bark				FACW species x 2 =
2.	Baccharis halimifolia	10	Y	FAC	FAC species x 3 =
^	Groundseltree				FACU species x 4 =
3.				-	UPL species x 5 = (A) (B)
4.					Column Totals: (A) (B) Prevalence Index = B/A =
٠.		_			Trovalonoo maex = B/Y =
5					
					Hydrophytic Vegetation Indicators:
	Total Cover: 20	50% of total cover	10%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	4%		x 2 - Dominance Test is >50%
	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Phragmites australis	65	<u> </u>	FACW	4 - Morphological Adaptations¹ (Provide supporting data
2.	Common Reed				and Remarks or on a separate sheet) Problematic Hydrophytic Vegetation¹ (Explain)
۷.					Problematic Hydrophytic Vegetation (Explain)
3.				-	
4.					¹ Indicators of hydric soil and wetland hydrology must
_					be present
5.					Definitions of Four Vegetation Strata: Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.	-			-	diameter at breast height (DBH), regardless of height.
0.					diameter at breast neight (DDF1), regardless of height.
	Total Cover: 65	50% of total cover	33%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	13%		3in. DBH and greater than 3.28 ft (1m) tall.
	oody Vine Stratum ()	_			
1.				-	Herb - All herbaceous (non-woody) plants, regardless of size,
2					and woody plants less than 3.28 ft tall.
2.					Woody Vine - All woody vines greater than 3.28 ft in height.
3.					vine - 7th woody vines greater than 3.20 it in neight.
-					
4.					Hydrophytic
					Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
D۵	marks: (Include photo numb	20% of total cover	0%		
ĸe	marks. (include photo numb	ers nere or on a separ	rate sneet.)		Herb (5-ft radius)
			Trees and \	linos	
			(30-ft radi		
			(30-it lau	1431	
		Γ			
			Sapling/Shr		
			(15-ft radiu	is)	

3011												
Profile Des	cription: (Describe to the	depth need	ed to document th	e indicator	or confirm th	e absence c	of indicators.)					
Depth	Matrix		Redox Features			_						
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks				
0-2	10YR 3/1	100					loam					
2-11	10YR 5/2	100	40)/D 5/0				sand	fine sand				
11-12+	10YR 5/1	90	10YR 5/3	10			sand	fine sand				
	-											
¹Type: C=C	oncentration, D=Depletion,	RM-Reduce	ad Matrix MS-Mask	ked Sand G	rains		2l ocation: PI –Po	re Lining, M=Matrix.				
	Indicators: (Applicable t		,		idiiis.	Indicators	for Problematic Hyd					
_	ol (A1)	io an Enns,		•	e (S8) (LRR \$		1cm Muck (A9) (I					
_	Epipedon (A2)				(LRR S, T, U	_	2cm Muck (A10)	•				
	Histic (A3)				F1) (LRR O)							
_	gen Sulfide (A4)		Loamy Gley			_	Piedmont Floodplain Soils (F19) (LRR P, S, T)					
_ ' '	ed Layers (A5)		X Depleted Ma		-,	_		t Loamy Soils (F20)				
_	ic Bodies (A6) (LRR P, T,	U)	Redox Dark	. ,	;)	_	(MLRA 153B)	Learny Cone (1 20)				
_	Mucky Mineral (A7) (LRR F	-	Depleted Da	•	,		Red Parent Mater	ial (TF2)				
	Presence (A8) (LRR U)	, -, -,	Redox Depr		. ,	_		k Surface (TF12) (LRR T, U)				
	fuck (A9) (LRR P, T)		Marl (F10) (,	,	_	Other (Explain in					
	ted Below Dark Surface (A	11)		•	(MLRA 151)	_		- · · · · ·				
	Dark Surface (A12)	,		, ,	s (F12) (LRR (O, P, T)	3Indicators of hydi	rophytic vegetation and				
_	al Prairie Redox (A16) (ML	RA 150A)			LRR P, T, U)							
	Mucky Mineral (S1) (LRR	-	Delta Ochrid			unless disturbed or problematic						
	Gleyed Matrix (S4)			MLRA 150A,	150B)		•					
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 149A)												
Strippe	ed Matrix (S6)		Anomalous	Bright Loan	ny Soils (F20)	(MLRA 149A	A, 153C, 153D)					
Dark S	Surface (S7) (LRR P, S, T,	U)										
Restrictive	Layer (if observed):											
Type:												
Depth (i	inches):					Hydric Soils Present? YES X No						
Remarks: S	Soil streaking was observed	d in the sand	layer									
110 4	Corne of Engineers					۸ <u>۱</u> ۱ - ۱ - ۱ - ۱ - ۱	N. N. C 4-1	Diala Danian Manaian 0.0				

Project/Site: I-64 /High Rise Brid	dge Corridor Study		City/County:	City of Che			Samp	ling Date:	:	2/3/2014
Applicant/Owner: VDOT						State: VA	Samp	ling Point	:: WL-39	
Investigator(s): Glenn Wilson a			Section, Town							
			Local relief (co			none		pe (%):	0-1%	
Subregion (LRR or MLRA): LRR		_	45' 28.03"	Lo	ng: <u>76° 1</u>	8' 12.84"		Datum:	WGS 8	
Soil Map Unit Name: Udorthents-	*					NWI class			and E2EI	M1P
Are climatic / hydrologic conditions o			Yes			, , ,	in in Remark	·		
Are Vegetation,Soil		significantly disturb				rcumstances" pres		s <u>X</u>	No	
Are Vegetation,Soil	or Hydrology	naturally problemate	tic?	(If neede	ed, explain a	any answers in Re	marks.)			
SUMMARY OF FINDINGS-A	ttach site map sho	owing sampling i	point locat	ions. tran	sects. im	nportant featu	res. etc.			
Hydrophytic Vegetation Present?	Yes X	No		, , , , , , , , , , , , , , , , , , , ,			,			
Hydric Soil Present?	Yes X	No		Is the Samp	oled Area					
Wetland Hydrology Present?	Yes X	No		Within a W		Yes	X N	lo		
Remarks: Tidal E2EM Wetland Wetland lat and long were taken app	voximately in the middle	of the wetland (not so	nil hore locatio	ın)						
This wetland is located to the south of			on bore locatio	"")						
HYDROLOGY										
Wetland Hydrology Indicators:					Secon	dary Indicators (m	ninimum of tw	o require	ed)	-
Primary Indicators (minimum of one	is required; check all tha	it apply)			:	Surface Soil Crack	ks (B6)			
Surface Water (A1)	Aqu	atic Fauna (B13)				Sparsely Vegetate	ed Concave S	Surface (E	38)	
X High Water Table (A2)	Mari	Deposits (B15) (LRR	R U)			Drainage Patterns	(B10)			
X Saturation (A3)	Hyd	rogen Sulfide Odor (C	:1)			Moss Trim Lines (B16)			
X Water Marks (B1)	Oxid	lized Rhizospheres on	Living Roots	(C3)		Dry-Season Wate	r Table (C2)			
Sediment Deposits (B2)	Pres	ence of Reduced Iron	n (C4)			Crayfish Burrows	(C8)			
X Drift Deposits (B3)	Rec	ent Reduction in Tilled	Soils (C6)			Saturation Visible	on Aerial Ima	agery (C9	1)	
Algal Mat or Crust (B4)	Thin	Muck Surface (C7)			X	Geomorphic Posit	ion (D2)			
Iron Deposits (B5)	Othe	er (Explain in Remarks	s)			Shallow Aquitard (D3)			
Inundation Visible on Aerial Im-	agery (B7)				X	FAC-Neutral Test	(D5)			
X Water-Stained Leaves (B9)					;	Sphagnum moss ((D8) (LRR T,	U)		
Field Observations:										
Surface Water Present? Yes	No X	Depth (inches):		_						
Water Table Present? Yes	X No	Depth (inches):		0"						
Saturation Present? Yes	X No —	Depth (inches):			Wetland H	lydrology Presen	t? Yes	. X	No	
(includes capillary fringe)	<u> </u>	Deptit (mones).			Wettaria II	iyarology i reseri		<u> </u>	—	
Describe Recorded Data (stream gai	uge, monitoring well, aer	rial photos, previous in	nspections), if	available:						
, ,			. ,,							
Remarks: Water is at soil surface										

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
, <u> </u>		<u> </u>	,	Sampling date: 2/3/2014
				Sampling point: WL-39
Vegetation (Four Strata) - Us		•		
T 00 1 (D) 1 1 (0)	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1			·	That are OBL, FACW, or FAC: 3 (A)
2.				Total number of Dominant
Z				Species across All Strata: 3 (B)
3.	<u> </u>		-	Opecies across Air Strata.
J				Percent of Dominant Species
4.		·		That are OBL, FACW, or FAC: 100% (A/B)
				111at are 652, 17 to 17, 61 17 to
Total Cover: 0	50% of total cover	0%		
	20% of total cover	0%	-	Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
Baccharis halimifolia	5	Υ	FAC	OBL species x 1 =
Groundseltree	<u> </u>		·	FACW species x 2 =
2.				FAC species x 3 =
				FACU species x 4 =
3.	<u> </u>			UPL species x 5 =
				Column Totals: (A) (B)
4				Prevalence Index = B/A =
5				
				Hydrophytic Vegetation Indicators:
Total Cover: 5	50% of total cover	3%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	1%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
Spartina patens	30	Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Salt-Meadow Cord Grass				and Remarks or on a separate sheet)
2. Aster spp.	20	Y	FAC	Problematic Hydrophytic Vegetation¹ (Explain)
Spartina cynosuroides	10	N	OBL	
Big Cord Grass				
4. Phragmites australis	5	N	FACW	¹Indicators of hydric soil and wetland hydrology must
Common Reed		N	OBL	be present Definitions of Four Vegetation Strata:
5. <u>Juncus roemerianus</u> Roemer's Rush	<u> </u>		OBL	Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.		· 		diameter at breast height (DBH), regardless of height.
0.				diameter at breast neight (DBH), regardless of height.
Total Cover: 70	50% of total cover	35%	-	Sapling /Shrub - Woody plants, excluding vines, less than
Total Cover. 70	20% of total cover	14%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()	2070 01 10101 00101	1470	-	om. BBH and greater than 6.20 ft (1111) tall.
1.				Herb - All herbaceous (non-woody) plants, regardless of size,
· ·	<u> </u>			and woody plants less than 3.28 ft tall.
2.				
				Woody Vine - All woody vines greater than 3.28 ft in height.
3.				
-				
4.				Hydrophytic
	<u> </u>			Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
	20% of total cover	0%		
Remarks: (Include photo num	nbers here or on a sepa	rate sheet.)		Herb (5-ft radius)
				Herb (5-it radius)
				\longrightarrow
		Trees and \	/ines	
		(30-ft rad		
		(33 17 186)		
	1			
		Sapling/Shr		
		(15-ft radiu	ıs)	
	l			

Project/Site	L64 /High Ric	se Bridge Corridor St	tudy
riojeci/Site.	1-04 / MIGH KIS	se bilage Collian Si	luuy

Soil										
Profile Des	cription: (Describe to the	depth need	ed to document tl	ne indicator	or confirm th	e absence of	f indicators.)			
Depth	Matrix			Redox Fea	itures					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks		
0-4	10YR 3/1	100					loam	many roots		
4-7	10YR 3/1	100					sandy loam			
7-12+	10YR 5/1	100					sand	-		
7-12+ 101R 5/1 100		100					Sana	-		
								-		
										
	oncentration, D=Depletion,		•		ains.		² Location: PL=Pore	*		
1 -	Indicators: (Applicable to	o all LRRs,		•			for Problematic Hydr			
Histose	ol (A1)		Polyvalue E	Below Surface	e (S8) (LRR S	S, T, U)	_ 1cm Muck (A9) (L	RR O)		
Histic I	Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U)	_	_ 2cm Muck (A10) (LRR S)		
Black I	Histic (A3)		Loamy Muc	ky Mineral (F	1) (LRR O)	_	_ Reduced Vertic (F	(8) (outside MLRA 150A,B)		
Hydrog	gen Sulfide (A4)		Loamy Gley	ed Matrix (F2	2)	_	Piedmont Floodpla	in Soils (F19) (LRR P, S, T)		
Statifie	ed Layers (A5)		X Depleted M	atrix (F3)			Anomalous Bright	Loamy Soils (F20)		
Organi	ic Bodies (A6) (LRR P, T, U	J)	Redox Dark	Surface(F6)			(MLRA 153B)			
5 cm N	Mucky Mineral (A7) (LRR P	, T, U)	Depleted D	ark Surface (F7)		Red Parent Materia	al (TF2)		
Muck F	Presence (A8) (LRR U)		Redox Dep	ressions (F8)		·	Very Shallow Dark	Surface (TF12) (LRR T, U)		
1cm M	luck (A9) (LRR P, T)		Marl (F10) ((LRR U)			Other (Explain in R			
	ed Below Dark Surface (A1	1)		chric (F11) (MLRA 151)	_	_ ` '	,		
	Dark Surface (A12)	-,		. , .	(F12) (LRR (D. P. T)	3Indicators of hydro	phytic vegetation and		
Coastal Prairie Redox (A16) (MLRA 150A)		Umbric Surface (F13) (LRR P, T, U)			-,-,-,	wetland hydrology must be present,				
_	· / ·	,	Delta Ochric (F17) (MLRA 151)				unless disturbed or	•		
Sandy Mucky Mineral (S1) (LRR, O, S) Sandy Gleyed Matrix (S4)				Reduced Vertic (F18) (MLRA 150A, 150B)						
				· , ,	ls (F19) (MLF	•				
	Redox (S5)				. , .	•	4E2C 4E2D)			
	ed Matrix (S6)		Anomaious	Bright Loam	y 5011S (F20)	(IVILKA 149A	, 153C, 153D)			
	Surface (S7) (LRR P, S, T,	U)								
_	Layer (if observed):									
Type:										
Depth (i	nches):					Hydric Soils	s Present? Y	ES <u>X</u> No		
Remarks:										

Project/Site: I-64 /High Rise B	ridge Corrid	or Stu	dy Cit	ty/County: (City of Che	sapeake)	Sampling Date:	2/6/2014
Applicant/Owner: VDOT							State: VA	Sampling Point:	WL-40, 41, 42
Investigator(s): David Kwasnie	ewski and G	lenn \	Wilson Se	ction, Town	ship, Range:		·		
Landform (hillslope, terrace, etc.):	tidal mars	h	Lo	cal relief (co	oncave, conve	ex, none):	none	Slope (%):	0-1%
Subregion (LRR or MLRA): LRR	T		Lat: 36° 4	45' 35.49"	Lor	ng: <u>76°</u>	18' 04.96"	Datum:	WGS 84
Soil Map Unit Name: Pacaty mu	cky peat						NWI classificati	ion: N/A	
Are climatic / hydrologic conditions	on the site typ	oical for	this time of year?	Yes	X No		(If no, explain in	Remarks.)	
Are Vegetation,Soil	or Hydrolog,	у	significantly disturbe	ed?	Are '	"Normal C	ircumstances" present?	Yes X	No
Are Vegetation ,Soil			naturally problemation	c?	(If neede	d, explain	any answers in Remark	(s.)	
	_								
SUMMARY OF FINDINGS-	Attach site	map	showing sampling po	oint locat	ions, trans	sects, ir	nportant features,	etc.	
Hydrophytic Vegetation Present?	Yes	Χ	No						
Hydric Soil Present?	Yes	Χ	No		Is the Samp	led Area			
Wetland Hydrology Present?	Yes	Χ	No		Within a We		Yes X	No	
									<u>-</u>
Remarks: Tidal E2EM Wetland			iddla af tha watland /nat asi	عمما معمطان	اسماد				
Wetland lat and long were taken a Wetland 40 and 41 located north o					ion)				
Troduction of the control of the con	, , , , , , , , , , , , , , , , , , ,	12 100	atod oodin of 1 o 1 within tid	ai watoro					
HYDROLOGY									
Wetland Hydrology Indicators:						Secor	ndary Indicators (minimu	um of two require	d)
Primary Indicators (minimum of on	e is required;	check a	II that apply)				Surface Soil Cracks (B6	6)	
Surface Water (A1)		/	Aquatic Fauna (B13)				Sparsely Vegetated Co	ncave Surface (B	8)
X High Water Table (A2)		ı	Marl Deposits (B15) (LRR I	U)		X	Drainage Patterns (B10))	
X Saturation (A3)		ΧI	Hydrogen Sulfide Odor (C1))			Moss Trim Lines (B16)		
Water Marks (B1)		_ (Oxidized Rhizospheres on L	Living Roots	(C3)		Dry-Season Water Tab	le (C2)	
Sediment Deposits (B2)			Presence of Reduced Iron (=	,		Crayfish Burrows (C8)	,	
Drift Deposits (B3)			Recent Reduction in Tilled S				Saturation Visible on A	erial Imagery (C9)
Algal Mat or Crust (B4)			Thin Muck Surface (C7)	()			Geomorphic Position (E		,
Iron Deposits (B5)			Other (Explain in Remarks)			_	Shallow Aquitard (D3)) <u></u>	
	magary (P7)	— `	other (Explain in Remarks)			_			
Inundation Visible on Aerial I	magery (b7)					<u>X</u>	FAC-Neutral Test (D5)	(IDD T II)	
X Water-Stained Leaves (B9)						_	Sphagnum moss (D8)	(LKK 1, U)	
Field Observations:									
Surface Water Present? Yes	No	Χ	Depth (inches):		-				
Water Table Present? Yes	X No		Depth (inches):		0"				
Saturation Present? Yes	X No		Depth (inches):		0"	Wetland F	lydrology Present?	Yes X	No
(includes capillary fringe)			, ,				, ,,		
Describe Recorded Data (stream of	gauge, monitor	ing wel	I, aerial photos, previous in	spections),	if available:				
	_	-							
Remarks: Data recorded in Februa	ary with over 0	5" of n	recin in the previous week						
Tremarks. Data recorded in February	ary, with over o	.5 OI P	recip in the previous week.						

Project/Site:	I-64 /High R	ise Bridge Corridor S	Study	
•	-	-	-	Sampling date: <u>2/6/2014</u>
				Sampling point: WL-40, 41, 42
Vegetation (Four Strata				1
Torre Otrestore (Distribute	Absol		Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes 1.	: ft) % Co	ver Species?	Status	Number of Dominant species
1				That are OBL, FACW, or FAC: 2 (A)
2.				Total number of Dominant
Z				
3.				Species across All Strata: 2 (B)
J				Percent of Dominant Species
4.			- ——	That are OBL, FACW, or FAC: 100% (A/B)
т				111at are OBE, 1 ACW, 011 AC. 10076 (A/B)
Total Cover: 0	50% of total	cover 0%		
rotar Gover.	20% of total			Prevalence Index worksheet:
Sapling /Shrub Stratum		070		Total % Cover of Multiply by:
1.				OBL species x 1 =
				FACW species x 2 =
2.		 -		FAC species x 3 =
				FACU species x 4 =
3.		 -		UPL species x 5 =
				Column Totals: (A) (B)
4.				Prevalence Index = B/A =
5				
				Hydrophytic Vegetation Indicators:
Total Cover: 0	50% of total	cover 0%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total	cover 0%		X 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1. Juncus roemeranus		50 Y	OBL	4 - Morphological Adaptations ¹ (Provide supporting data
needlegrass rush				and Remarks or on a separate sheet)
2. Spartina alterniflora		50 Y	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
Saltwater Cord Gras	<u></u>	· · · · · · · · · · · · · · · · · · ·		
Distichlis spicata		5 N	FACW	
coastal salt grass				
4.				¹ Indicators of hydric soil and wetland hydrology must
				be present
5				Definitions of Four Vegetation Strata:
				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
Total Cover: 105				Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total	cover 21%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
1				Herb - All herbaceous (non-woody) plants, regardless of size,
_		· · · · · · · · · · · · · · · · · · ·	- -	and woody plants less than 3.28 ft tall.
2				
				Woody Vine - All woody vines greater than 3.28 ft in height.
3				
. —				l.,
4				Hydrophytic
-	500/ (///			Vegetation
Total Cover: 0	50% of total			Present? Yes X No
Danasilas (Include abete	20% of total		4.\	
Remarks: (Include photo	numbers here o	r on a separate snee	t.)	Herb (5-ft radius)
		Trees and	d Vines —	
		(30-ft ra		
		(30 1616	lalasi	
		o 11 (a)		
		Sapling/Sh		
		(15-ft radi	us)	

Project/Site:	I-64 /High Ri	e Bridge	Corridor Study	

Sampling date: <u>2/6/2014</u>
Sampling point: <u>WL-40, 41, 42</u>

Soil								
Profile De	scription: (Describe to th	e depth need	led to document t	he indicator	or confirm th	e absence o	f indicators.)	
Depth	Matrix			Redox Fea	tures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-4	10YR 4/2	100					silt loam	wet, organic root mat
4-10	7.5YR 5/1	100					clay loam	wet, organic root mat
10-16+	10YR 3/1	100					silt loam	wet
								-
								-
¹Type: C=C	Concentration, D=Depletion	n, RM=Reduc	ed Matrix, MS=Mas	sked Sand Gra	ains.		² Location: PL=Po	re Lining, M=Matrix.
Hydric Soi	il Indicators: (Applicable	to all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hyd	Iric Soils³:
Histo	sol (A1)		Polyvalue l	Below Surface	(S8) (LRR S	s, T, U)	1cm Muck (A9) (LRR O)
Histic	Epipedon (A2)		Thin Dark	Surface (S9)	(LRR S, T, U)	_	2cm Muck (A10)	(LRR S)
Black	Histic (A3)		Loamy Mu	cky Mineral (F	1) (LRR O)		Reduced Vertic (I	-18) (outside MLRA 150A,B)
X Hydro	ogen Sulfide (A4)		-	yed Matrix (F2				lain Soils (F19) (LRR P, S, T)
Statifi	ied Layers (A5)		X Depleted N	Matrix (F3)	,		Anomalous Brigh	t Loamy Soils (F20)
Organ	nic Bodies (A6) (LRR P, T	', U)	Redox Dar	k Surface(F6)			(MLRA 153B)	,
5 cm	Mucky Mineral (A7) (LRR	P, T, U)	Depleted D	Oark Surface (F7)		Red Parent Mate	rial (TF2)
Muck	Presence (A8) (LRR U)		Redox Dep	ressions (F8)			Very Shallow Dar	k Surface (TF12) (LRR T, U)
1cm l	Muck (A9) (LRR P, T)		Marl (F10)	(LRR U)			Other (Explain in	Remarks)
Deple	eted Below Dark Surface (A	A11)	Depleted C	Ochric (F11) (MLRA 151)		_	
Thick	Dark Surface (A12)		Iron-Manga	anese Masses	(F12) (LRR (D, P, T)	3Indicators of hyd	rophytic vegetation and
Coas	tal Prairie Redox (A16) (M	ILRA 150A)	Umbric Su	rface (F13) (L	.RR P, T, U)		wetland hydrology	y must be present,
Sand	y Mucky Mineral (S1) (LRI	R, O, S)	Delta Ochr	ric (F17) (MLF	RA 151)		unless disturbed	or problematic
Sand	y Gleyed Matrix (S4)		Reduced V	/ertic (F18) (N	/ILRA 150A, 1	50B)		
Sand	y Redox (S5)		Piedmont I	Floodplain Soi	ls (F19) (MLF	RA 149A)		
Stripp	oed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)	
Dark	Surface (S7) (LRR P, S, 1	Γ, U)						
Restrictive	e Layer (if observed):							
Type:								
Depth	(inches):					Hydric Soil	s Present?	YES X No
Remarks:	sulfidic odors observed	in upper 12"						
								=

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/4/2014 Applicant/Owner: VDOT State: VA Sampling Point: WL-43-44 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Local relief (concave, convex, none): none Slope (%): 0-1% Long: <u>76° 1</u>7' 33.48" Subregion (LRR or MLRA): LRR T 36° 45' 30.67" WGS 84 Lat: Datum: Soil Map Unit Name: Udorthents-Urban land complex and Water E2USN, E2EM1P, and E1UBL NWI classification: X No Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) Are Vegetation _____,Soil _____,or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ____ Soil ____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X Hydric Soil Present? Is the Sampled Area Yes X No Wetland Hydrology Present? No Within a Wetland? Remarks: Tidal E2EM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the north of I-64 within tidal waters adjacent and west of railroad **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) X High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) X Hydrogen Sulfide Odor (C1) Saturation (A3) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Recent Reduction in Tilled Soils (C6) Drift Deposits (B3) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Х Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Depth (inches): Wetland Hydrology Present? Saturation Present? Depth (inches): Yes X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Stream flows through wetland

	Project/Site:	I-64 /High Rise Bride	ge Corridor St	udy	
	,			•	Sampling date: 2/4/2014
					Sampling point: WL-43-44
Ve	getation (Four Strata) - Use	scientific names of	plants.		
	•	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	,				That are OBL, FACW, or FAC: 2 (A)
		_			(/
2.		_		-	Total number of Dominant
۷.					Species across All Strata: 2 (B)
3.	-				Species across Air Strata(D)
ა.					Developed of Developed Consider
					Percent of Dominant Species
4.					That are OBL, FACW, or FAC: 100% (A/B)
	Total Cover: 0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1.		2	Y	FAC	OBL species x 1 =
	Groundseltree	_			FACW species x 2 =
2.					FAC species x 3 =
۷.					FACU species
2					
3.	-				UPL species x 5 =(P)
					Column Totals:(A)(B)
4.					Prevalence Index = B/A =
5					
					Hydrophytic Vegetation Indicators:
	Total Cover: 2	50% of total cover	1%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	0%		x 2 - Dominance Test is >50%
Ц۵	rb Stratum ()	2070 01 10101 00101	070		3 - Prevalence Index is ≤3.0 ¹
1.	Spartina alterniflora	85	<u> </u>	OBL	4 - Morphological Adaptations¹ (Provide supporting data
	Saltwater Cord Grass				and Remarks or on a separate sheet)
2.	Phragmites australis	10	N	FACW	Problematic Hydrophytic Vegetation¹ (Explain)
	Common Reed				
3.	Spartina cynosuroides	5	N	OBL	
	Big Cord Grass				
4.		_			¹ Indicators of hydric soil and wetland hydrology must
•	-				be present
5.					Definitions of Four Vegetation Strata:
٥.					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
_	=				
6.					diameter at breast height (DBH), regardless of height.
	Total Cover: 100	50% of total cover	50%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	20%		3in. DBH and greater than 3.28 ft (1m) tall.
Wc	oody Vine Stratum ()				
1.					Herb - All herbaceous (non-woody) plants, regardless of size,
		_			and woody plants less than 3.28 ft tall.
2.					
					Woody Vine - All woody vines greater than 3.28 ft in height.
3.		_	-		Troody Tine - All woody Tines greater than 5.20 it in height.
J.	-				
4.					Hydrophytic
		_			Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
		20% of total cover	0%		
Re	marks: (Include photo numb	ers here or on a separ	rate sheet.)		
	ccharis halimifolia and Phrag			a wetland bo	undary Herb (5-ft radius)
		grinios adoliano iroto	0.000.100.0.0	9	
			Trees and \	/ines	
			(30-ft radi	ius)	
				•	$ \rightarrow () \times $
		Г			T1 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
			Sapling/Shr	ub	
			(15-ft radiu	ıs)	
			•		

Project/Site: I-64 /High Rise Bridge Corridor Study

3011								
Profile Des	cription: (Describe to the	depth need	ed to document th	ne indicator	or confirm th	ne absence o	of indicators.)	
Depth	Matrix			Redox Fe	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-5	10YR 3/2	100					silt loam	many roots, root mat
5-16+	10YR 5/1	100					sand	
								-
								-
1Typo: C-C	oncentration, D=Depletion,	PM-Poduce	d Matrix MS_Mas	kod Sand G	raine		² Location: PL=Pore	Lining M-Matrix
- / '	Indicators: (Applicable t		,		iairis.	Indicators	for Problematic Hydr	
Histos	٠	io ali enno,		•	e (S8) (LRR \$		•	
	` '					_	1cm Muck (A9) (L	·
	Epipedon (A2)				(LRR S, T, U)	, <u> </u>	2cm Muck (A10) (•
	Histic (A3)				F1) (LRR O)	_		18) (outside MLRA 150A,B)
— ´ `	gen Sulfide (A4)		Loamy Gley		-2)	_		nin Soils (F19) (LRR P, S, T)
_	d Layers (A5)		X Depleted M	. ,		_	Anomalous Bright	Loamy Soils (F20)
_	c Bodies (A6) (LRR P, T,	-		Surface(F6	,		(MLRA 153B)	
5 cm N	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted Da	ark Surface	(F7)	_	Red Parent Materi	` '
Muck F	Presence (A8) (LRR U)		Redox Depi	ressions (F8	5)	_	Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm M	uck (A9) (LRR P, T)		Marl (F10) (LRR U)		_	Other (Explain in F	Remarks)
X Deplet	ed Below Dark Surface (A	11)	Depleted O	chric (F11)	(MLRA 151)			
Thick [Dark Surface (A12)		Iron-Manga	nese Masse	s (F12) (LRR (O, P, T)	3Indicators of hydro	ophytic vegetation and
Coasta	l Prairie Redox (A16) (ML	RA 150A)	Umbric Surf	face (F13) (LRR P, T, U)		wetland hydrology	must be present,
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (ML	RA 151)		unless disturbed o	r problematic
Sandy	Gleyed Matrix (S4)		Reduced Ve	ertic (F18) (MLRA 150A, 1	150B)		
Sandy	Redox (S5)		Piedmont F	loodplain Sc	oils (F19) (ML	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	ny Soils (F20)	(MLRA 149	A, 153C, 153D)	
Dark S	urface (S7) (LRR P, S, T,	U)						
Restrictive	Layer (if observed):							
Type:								
Depth (i	nches):					Hydric Soi	Is Present? Y	ES X No
						,		
Remarks: s	treaking was observed sta	rting at 7"+						
	Ü	Ü						
110 4	Carna of Engineers					Atlanti-	O If O t - I. F	Nain Danian Vansian 0.0

Project/Site: I-64 /High Rise Brid	lge Corridor Study	<u>'</u>	City/County:	City of Che	esapeake		Sampling Date:	2/4/2014
Applicant/Owner: VDOT		State: VA Sampling					WL-45	
Investigator(s): Glenn Wilson ar	nd David Kwasnie	wski	Section, Tow	nship, Range:	·			
Landform (hillslope, terrace, etc.):	tidal floodplain		Local relief (c	oncave, conv	ex, none):	none	Slope (%):	0-1%
Subregion (LRR or MLRA): LRR T	-	Lat:	36° 45′ 29.93	<u>"</u> Lo	ong: <u>76° 17'</u>	31.45"	Datum:	WGS 84
Soil Map Unit Name: Pocaty muck	ky peat					NWI classification	on: <u>E1UBL an</u>	d N/A
Are climatic / hydrologic conditions or	the site typical for this	s time of year?	Ye	s X No		(If no, explain in F	Remarks.)	
Are Vegetation,Soil,	or Hydrology	significantly dis	turbed?	Are	"Normal Circu	ımstances" present?	Yes X	No
Are Vegetation ,Soil , ,Soil ,	or Hydrology	naturally proble	ematic?	(If need	ed, explain any	answers in Remarks	5.)	
SUMMARY OF FINDINGS-At	tach site map sh	owing samplin	ng point loca	tions, tran	sects, imp	ortant features,	etc.	
Hydrophytic Vegetation Present?	Yes X	No						
Hydric Soil Present?	Yes X	No		Is the Samp	pled Area			
Wetland Hydrology Present?	Yes X	No		Within a W	/etland?	Yes X	No	
Remarks: Tidal E2EM5 Wetland (<i>Phr</i> Wetland lat and long were taken appr This wetland is located to the north of	roximately in the middle	e of the wetland (no	ot soil bore locati	on)				
HYDROLOGY								
Wetland Hydrology Indicators:					Seconda	ry Indicators (minimu	m of two required)	
Primary Indicators (minimum of one is	s required; check all th	at apply)			Su	rface Soil Cracks (B6)	
Surface Water (A1)	Aqı	uatic Fauna (B13)			Sp:	arsely Vegetated Cor	cave Surface (B8))
X High Water Table (A2)	Ma	rl Deposits (B15) (I	LRR U)		Dra	ainage Patterns (B10))	
X Saturation (A3)	Hyd	drogen Sulfide Odor	r (C1)		Mo	ss Trim Lines (B16)		
Water Marks (B1)	Oxi	dized Rhizospheres	s on Living Root	s (C3)	Dry	-Season Water Table	e (C2)	
Sediment Deposits (B2)	Pre	sence of Reduced	Iron (C4)		Cra	ayfish Burrows (C8)		
Drift Deposits (B3)	Rec	cent Reduction in T	illed Soils (C6)		Sat	turation Visible on Ae	rial Imagery (C9)	
Algal Mat or Crust (B4)	Thi	n Muck Surface (C7	7)		X Ge	omorphic Position (D	2)	
Iron Deposits (B5)	Oth	er (Explain in Rema	arks)		Sh	allow Aquitard (D3)		
Inundation Visible on Aerial Ima	agery (B7)				X FA	C-Neutral Test (D5)		
Water-Stained Leaves (B9)					Sp	hagnum moss (D8) (I	_RR T, U)	
Field Observations:								
Surface Water Present? Yes	No X	Donth (inches)						
Water Table Present? Yes	X No X	Depth (inches): Depth (inches):		2"				
Saturation Present? Yes	X No	Depth (inches):		2"	Watland Hyd	rology Procent?	Yes X	No
-	<u> </u>	Depth (inches)	· —		welland nyu	rology Present?	Yes X	NO
(includes capillary fringe) Describe Recorded Data (stream gau	ige monitoring well as	orial photos previou	is inspections) i	f available:				
` `	go, mormoning won, ac	mai priotoo, provioc	io mopositorio), i	r avallable.				
Remarks: adjacent to tidal channel								

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
	-		-	Sampling date: 2/4/2014
Variation (Faur Strata)	lles scientific nomes of	mlamta		Sampling point: WL-45
Vegetation (Four Strata) -	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: f		Species?	Status	Number of Dominant species
1.	70 0010.	<u> </u>	Clarao	That are OBL, FACW, or FAC: 3 (A)
				, , ,
2.				Total number of Dominant
		. <u> </u>		Species across All Strata:3(B)
3				Percent of Dominant Species
4.				That are OBL, FACW, or FAC:
				111dt die GBE, 17tew, 6117te
Total Cover: 0	50% of total cover	0%		
	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
Iva frutescens Issuitte Bark	5	Y	FACW	OBL species x 1 =
Jesuit's-Bark 2.				FACW species x 2 = FAC species x 3 =
Z				FACU species
3.				UPL species x 5 =
				Column Totals: (A) (B)
4.				Prevalence Index = B/A =
5	<u> </u>			
Total Cover: 5	F00/ of total cover	20/		Hydrophytic Vegetation Indicators:
Total Cover: 5	50% of total cover 20% of total cover	3% 1%		1 - Rapid Test for Hydrophytic Vegetation x 2 - Dominance Test is >50%
Herb Stratum ()	20% of total cover	170		3 - Prevalence Index is ≤3.0 ¹
1. Phragmites australis	95	Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Common Reed		'	TACV	and Remarks or on a separate sheet)
2.		· 		Problematic Hydrophytic Vegetation ¹ (Explain)
				(27piam)
3.				
4				1Indicators of hydric soil and wetland hydrology must
				be present
5				Definitions of Four Vegetation Strata:
6.				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
o				diameter at breast height (DBH), regardless of height.
Total Cover: 95	50% of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	19%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
Lonicera japonica	5	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
Japanese Honeysuckle	<u> </u>			and woody plants less than 3.28 ft tall.
2		·		Weeds Vine All weeds wines greater them 2.20 ft in height
3.				Woody Vine - All woody vines greater than 3.28 ft in height.
J				
4.				Hydrophytic
				Vegetation
Total Cover: 5	50% of total cover	3%		Present? Yes X No
	20% of total cover	1%		
Remarks: (Include photo no	umbers here or on a sepa	rate sheet.)		Herb (5-ft radius)
				Tierb (5 te radius)
				\longrightarrow
		Trees and \		
		(30-ft radi	ius)	
		Sapling/Shr	ub	
		(15-ft radiu		
		,	,	

Project/Site:	I-64 /High Rise Bridge Corridor Stud

Soil									
Profile Des	scription: (Describe to the	depth need	ed to document tl	he indicator	or confirm th	e absence of	f indicators.)		
Depth	Matrix			Redox Fea	atures				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks	
0-3	10YR 4/2	98	10YR 4/3	2			loamy sand	roots common	
3-9	10YR 5/1	95	10YR 4/4	5			loamy sand	roots common	
9-13	10YR 3/1	100					loamy sand		
13-16	10YR 4/1	100					sand	·	
16-20	10YR 6/1	100					fine sand		
¹Tvpe: C=C	oncentration, D=Depletion,	RM=Reduce	ed Matrix. MS=Mas	ked Sand Gr	ains.		² Location: PL=Po	re Lining, M=Matrix.	
	Indicators: (Applicable		•			Indicators t	for Problematic Hyd	<u>.</u>	
1 -	sol (A1)	,		•	e (S8) (LRR S		1cm Muck (A9) (I		
_	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10)		
	Histic (A3)			ky Mineral (F	-	_	_	18) (outside MLRA 150A,B)	
	gen Sulfide (A4)			-		_		, ,	
				yed Matrix (F:	2)	_		ain Soils (F19) (LRR P, S, T)	
_	ed Layers (A5)	III\	X Depleted M	. ,		_		Loamy Soils (F20)	
	ic Bodies (A6) (LRR P, T,	-		c Surface(F6)			(MLRA 153B)	:al (TF2)	
	Mucky Mineral (A7) (LRR I	P, I, U)		ark Surface (. ,	_	Red Parent Mater	, ,	
_	Presence (A8) (LRR U)			ressions (F8))	_	_ ′	(Surface (TF12) (LRR T, U)	
_	Muck (A9) (LRR P, T)		Marl (F10) (_	Other (Explain in	Remarks)	
	ted Below Dark Surface (A	11)		chric (F11) (•				
_	Dark Surface (A12)				s (F12) (LRR (), P, 1)	=	rophytic vegetation and	
_	al Prairie Redox (A16) (ML	•			LRR P, T, U)		wetland hydrology		
_	Mucky Mineral (S1) (LRR	l, O, S)		c (F17) (MLI			unless disturbed of	or problematic	
	Gleyed Matrix (S4)				VILRA 150A, 1	-			
_	Redox (S5)			•	ils (F19) (MLF	•			
_	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)		
Dark S	Surface (S7) (LRR P, S, T,	, U)			ı				
Restrictive	Layer (if observed):								
Type:									
Depth (inches):					Hydric Soils	s Present?	(ES X No	
Remarks:									

Project/Site: I-64 /High Rise Bridg	je Corridor Stu	dy	City/County:	City of Che	esapeake)	Sampling Da	ite: 2/4/2014
Applicant/Owner: VDOT						State: VA	Sampling Po	int: WL-46
Investigator(s): Glenn Wilson and	d David Kwasn	iewski	Section, Town	nship, Range:				
Landform (hillslope, terrace, etc.): tio	dal floodplain		Local relief (c	oncave, conv	ex, none):	none	Slope (%):	0-1%
Subregion (LRR or MLRA): LRR T		Lat:	36° 45' 29.23'	<u>"</u> Lo	ong: <u>76° 1</u>	17' 30.18"	Datum:	WGS 84
Soil Map Unit Name: Udorthents-Ui	rban land com	olex				NWI class	sification: N/A	
Are climatic / hydrologic conditions on t	the site typical for	this time of year?	Ye	s X No		(If no, expla	in in Remarks.)	
Are Vegetation,Soil,o	r Hydrology	significantly d	isturbed?	Are	"Normal C	ircumstances" pre	sent? Yes X	(No
Are Vegetation,Soil,o Are Vegetation,Soil,o	r Hydrology	naturally prob	lematic?	(If need	ed, explain	any answers in Re	marks.)	
SUMMARY OF FINDINGS-Atta	ach site map	showing sampli	ng point loca	tions, tran	sects, in	nportant featu	res, etc.	
Hydrophytic Vegetation Present?	Yes X	No						
Hydric Soil Present?	Yes X	No		Is the Samp	pled Area			
Wetland Hydrology Present?	Yes X	No		Within a W	etland?	Yes	X No	
Remarks: Tidal E2EM5 Wetland (<i>Phrag</i> Wetland lat and long were taken approximately This wetland is located to the north of Location is between railroad	ximately in the mid	ddle of the wetland (n	ot soil bore location	on)				
HYDROLOGY								
Wetland Hydrology Indicators:							ninimum of two requ	ired)
Primary Indicators (minimum of one is	required; check al	I that apply)			. <u>—</u>	Surface Soil Crack	ks (B6)	
Surface Water (A1)	/	Aquatic Fauna (B13)				Sparsely Vegetate	ed Concave Surface	(B8)
X High Water Table (A2)	'	Marl Deposits (B15)	(LRR U)			Drainage Patterns	(B10)	
X Saturation (A3)	'	Hydrogen Sulfide Odd	or (C1)			Moss Trim Lines (B16)	
Water Marks (B1)	(Oxidized Rhizosphere	es on Living Roots	s (C3)		Dry-Season Wate	r Table (C2)	
Sediment Deposits (B2)	'	Presence of Reduced	I Iron (C4)			Crayfish Burrows	(C8)	
Drift Deposits (B3)	'	Recent Reduction in	Tilled Soils (C6)			Saturation Visible	on Aerial Imagery (C9)
Algal Mat or Crust (B4)		Thin Muck Surface (C	27)		X	Geomorphic Posit	ion (D2)	
Iron Deposits (B5)	(Other (Explain in Ren	narks)			Shallow Aquitard (D3)	
Inundation Visible on Aerial Imag	ery (B7)				X	FAC-Neutral Test	(D5)	
X Water-Stained Leaves (B9)						Sphagnum moss ((D8) (LRR T, U)	
Field Observations:								-
Surface Water Present? Yes	No X	Donth (inches	۸۰.					
Water Table Present? Yes	X No X	Depth (inches Depth (inches	-	0"				
Saturation Present? Yes	X No		· —	0"	Watland L	Judralagu Brasan	42 Van '	X No
_	X NO	Depth (inches	<i></i>	0	welland r	lydrology Presen	t? Yes	<u> </u>
(includes capillary fringe) Describe Recorded Data (stream gauge	e monitoring well	aerial photos previo	oue inenections) i	f available:				
Remarks: Appears to have sub-surface			us mspections), i	i avaliable.				

Project/Site:		I-64 /High Rise Bride	ge Corridor St	udy	
					Sampling date: 2/4/2014
Vanatation (Faux C	trotol Iloo	animutifia mamaa af	-lanta		Sampling point: WL-46
vegetation (Four S	trata) - Use	Scientific names of Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot	sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	0.200,	70 0010.	<u> </u>	Clarac	That are OBL, FACW, or FAC: 3 (A)
2.					Total number of Dominant
					Species across All Strata: 3 (B)
3.					Percent of Dominant Species
4.					That are OBL, FACW, or FAC:
T					111at are GBE, 17tow, 0117to
Total Cover:	0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Strat	tum (ft)				Total % Cover of Multiply by:
1. Baccharis halim	nifolia	10	<u> </u>	<u>FAC</u>	OBL species x 1 =
Groundseltree 2.					FACW species x 2 = FAC species x 3 =
Z					FACU species x 4 =
3.					UPL species x 5 =
					Column Totals: (A) (B)
4.		_			Prevalence Index = B/A =
5					Hydrophytic Vegetation Indicators:
Total Cover:	10	50% of total cover	5%		1 - Rapid Test for Hydrophytic Vegetation
rotal Gover.	10	20% of total cover	2%		x 2 - Dominance Test is >50%
Herb Stratum ()					3 - Prevalence Index is ≤3.0 ¹
1. Phragmites aus	stralis	95	Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Common Reed					and Remarks or on a separate sheet)
2.					Problematic Hydrophytic Vegetation¹ (Explain)
3					
					the disease of heading of lead continued headers are
4					¹Indicators of hydric soil and wetland hydrology must be present
5.					Definitions of Four Vegetation Strata:
·					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
Total Cover:	95	50% of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than
Mandy Mina Chroty	• ()	20% of total cover	19%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratun 1. Lonicera japoni		3	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
Japanese Hone				<u> TAC</u>	and woody plants less than 3.28 ft tall.
2.	y o u o i u o				and woody planto look than 0.20 it tall.
-					Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
4					Hydrophytic
Total Cover:	3	50% of total cover	2%		Vegetation Present? Yes X No
rotal Cover.	3	20% of total cover	2% 1%		Present? Yes X No
Remarks: (Include i	ohoto numbe	ers here or on a separ			
(oro or or or a copa.	a.c cc,		Herb (5-ft radius)
			Trees and \	/ines	
			(30-ft radi		
			,	- ,	
		ſ	Carlin. /cl		
			Sapling/Shr		
			(15-ft radiu	15)	

Depth	Matrix			Redox Fea	itures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
)-4	10YR 3/1	100					loamy sand	many roots
-9	10YR 5/1	80	10YR 4/4	20			loamy sand	few roots
-16+	10YR 4/2	90	10YR 4/4	10			loamy sand	
	concentration, D=Depletion,	DM. Dadua	ad Matrix MC Maal	rad Cand Cr			2l postion, DL Do	re Lining, M=Matrix.
	I Indicators: (Applicable t				all i5.	Indicators	for Problematic Hyd	*·
	sol (A1)	o un Enno,			e (S8) (LRR S		1cm Muck (A9) (
_	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10)	•
	Histic (A3)			ky Mineral (F		-		F18) (outside MLRA 150A,B)
	gen Sulfide (A4)		Loamy Gley	-		-		ain Soils (F19) (LRR P, S, T)
-	ed Layers (A5)		X Depleted Ma	•	•	-		t Loamy Soils (F20)
	ic Bodies (A6) (LRR P, T,	U)		Surface(F6)		-	(MLRA 153B)	• • •
	Mucky Mineral (A7) (LRR F	-	Depleted Da				Red Parent Mater	ial (TF2)
	Presence (A8) (LRR U)	-	Redox Depr	essions (F8)		_	Very Shallow Dar	k Surface (TF12) (LRR T, U)
1cm N	Muck (A9) (LRR P, T)		Marl (F10) (LRR U)			Other (Explain in	Remarks)
Deple	ted Below Dark Surface (A1	11)	Depleted Oc	chric (F11) (MLRA 151)	_		
Thick	Dark Surface (A12)		Iron-Mangar	nese Masses	(F12) (LRR (), P, T)	3Indicators of hyd	rophytic vegetation and
Coastal Prairie Redox (A16) (MLRA 150A) Umbric Surface (F13) (LRF					RR P, T, U)		wetland hydrology	must be present,
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochrid	(F17) (ML I	RA 151)		unless disturbed	or problematic
Sandy	Gleyed Matrix (S4)		Reduced Ve	ertic (F18) (F	/ILRA 150A, 1	50B)		
Sandy	Redox (S5)		Piedmont Fl	oodplain So	ls (F19) (MLF	RA 149A)		
Stripp	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149	A, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)						
_	Layer (if observed):							
Type:								
D 11 ("							450 V N
Depth (inches):					Hydric Soi	ils Present?	YES X No
Remarks:								
.cmarks.								

Project/Site: I-64 /High Rise Brid	ge Corridor Study	City/County: 0	City of Chesap	eake	Sampling Date:	2/4/2014
Applicant/Owner: VDOT				State: VA	Sampling Point:	WL-47, 48, 49
Investigator(s): Glenn Wilson an		Section, Towns				
· · · · · · · · · · · · · · · · · · ·	tidal floodplain		ncave, convex, no	· —		0-1%
Subregion (LRR or MLRA): LRR T			Long:	76° 17' 26.25"		WGS 84
Soil Map Unit Name: Pocaty muck				NWI classi		
Are climatic / hydrologic conditions on	the site typical for this time of ye	ear? Yes		• • •	n in Remarks.)	
Are Vegetation,Soil,	or Hydrologysignific	antly disturbed?	Are "Nor	mal Circumstances" pres	ent? Yes X	No
Are Vegetation,Soil,	or Hydrologynatural	lly problematic?	(If needed, ex	xplain any answers in Rer	marks.)	
SUMMARY OF FINDINGS-Att	tach site man showing s	ampling point locat	ions transec	ts_imnortant featur	es etc	
Hydrophytic Vegetation Present?	Yes X No		ions, transco	is, important reatur	03, 010.	
Hydric Soil Present?			Is the Sampled	Δrea		
Wetland Hydrology Present?	Yes X No		Within a Wetlan		X No	
	163 <u>X</u> 110		Within a Wellan		χ 10	
Remarks: Tidal E2EM Wetland Wetland lat and long were taken appro This wetland is located to the north of		tland (not soil bore locatio	n)			
HYDROLOGY						
Wetland Hydrology Indicators:			_	Secondary Indicators (mi	nimum of two required)	
Primary Indicators (minimum of one is	s required; check all that apply)		-	Surface Soil Crack	s (B6)	
X Surface Water (A1)	Aquatic Fauna	ı (B13)		Sparsely Vegetated	d Concave Surface (B8))
X High Water Table (A2)	Marl Deposits	(B15) (LRR U)	-	X Drainage Patterns	(B10)	
X Saturation (A3)	X Hydrogen Sulfi	ide Odor (C1)	•	Moss Trim Lines (E	316)	
X Water Marks (B1)	Oxidized Rhizo	ospheres on Living Roots	(C3)	Dry-Season Water	Table (C2)	
Sediment Deposits (B2)	Presence of R	educed Iron (C4)	•	Crayfish Burrows (C8)	
Drift Deposits (B3)	Recent Reduc	tion in Tilled Soils (C6)	_	Saturation Visible of	on Aerial Imagery (C9)	
Algal Mat or Crust (B4)	Thin Muck Sur	face (C7)	•	X Geomorphic Position	on (D2)	
Iron Deposits (B5)	Other (Explain	in Remarks)	_	Shallow Aquitard ([03)	
Inundation Visible on Aerial Imag	igery (B7)		•	X FAC-Neutral Test (D5)	
X Water-Stained Leaves (B9)			_	Sphagnum moss (I	D8) (LRR T, U)	
Field Observations:						
Surface Water Present? Yes	X No Depth ((inches):	2"			
Water Table Present? Yes	 ·	·	0"			
Saturation Present? Yes		(inches): (inches):		and Hydrology Present	? Yes X	No
(includes capillary fringe)	X No Deptil ((11101165).	Well	and Hydrology Fresent	r les <u>A</u>	NO
Describe Recorded Data (stream gaug	ge monitoring well aerial photos	previous inspections) if	available [.]			
Door Do Noor dod Data (or oar 1 gad	go, mormornig won, donar priotoo,	, providuo inopositorioj, ii	avanabio.			
Demonstra, Chrome flavor through wette	d					
Remarks: Stream flows through wetla	ına					

Project/Site:	I-64 /High Rise Brid	ge Corridor Stu	udy	
·	J		•	Sampling date: 2/4/2014
				Sampling point: WL-47, 48, 49
Vegetation (Four Strata) - Us	se scientific names of	plants.		
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1				That are OBL, FACW, or FAC:1(A)
2				Total number of Dominant
				Species across All Strata:1 (B)
3				
				Percent of Dominant Species
4				That are OBL, FACW, or FAC: 100% (A/B)
	<u> </u>			
Total Cover: 0	50% of total cover	0%		
	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1	<u> </u>			OBL species x 1 =
				FACW species x 2 =
2	<u> </u>			FAC species x 3 =
_				FACU species x 4 =
3				UPL species x 5 =
				Column Totals:(A)(B)
4	<u> </u>			Prevalence Index = B/A =
_				
5				
T.1.10	500/ (1.1.1	00/		Hydrophytic Vegetation Indicators:
Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
Spartina alterniflora	85	Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data
Saltwater Cord Grass				and Remarks or on a separate sheet)
2. Spartinia patens	20	N	OBL	Problematic Hydrophytic Vegetation¹ (Explain)
Freshwater Cord Grass				
3. Phragmites australis	5	N	FACW	
Common Reed				
4. Juncus roemerianus	5	N	OBL	1Indicators of hydric soil and wetland hydrology must
Roemer's Rush				be present
5				Definitions of Four Vegetation Strata:
	<u> </u>			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
	— 			
Total Cover: 115	50% of total cover	58%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	23%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
1				Herb - All herbaceous (non-woody) plants, regardless of size,
				and woody plants less than 3.28 ft tall.
2				West Mass All I in the Good fit I in the
				Woody Vine - All woody vines greater than 3.28 ft in height.
3.	<u> </u>			
				Hadronbod's
4				Hydrophytic
Total Cover: 0	F00/ of total cover	00/		Vegetation Present? Yes X No
Total Cover: 0	50% of total cover	0%		Present? Yes X No
Demarka: (Include photo num	20% of total cover	0%		
Remarks: (Include photo num	ibers here or on a sepa	rate sneet.)		Herb (5-ft radius)
				\rightarrow
		Trees and V	/ines	
		(30-ft radi	ius)	
		Carlin /Cl		
		Sapling/Shr		
		(15-ft radiu	is)	
	ı			

Project/Site:	L64 /High F	Pica Bridge	Corridor Study	

e	_	:1	
J	u	ш	

Soil								
	cription: (Describe to the	depth need	led to document th			e absence o	of indicators.)	
Depth	Matrix			Redox Fe				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-6	10YR 3/1	100					silt loam	many roots, root mat
6-16+	10YR 3/2	100					silt loam	
			. <u></u>					
								<u> </u>
¹Type: C=Co	oncentration, D=Depletion,	RM=Reduce	ed Matrix, MS=Mas	ked Sand G	rains.		² Location: PL=Pore	Lining, M=Matrix.
Hydric Soil	Indicators: (Applicable to	o all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydri	ic Soils³:
Histose		,		=	e (S8) (LRR S		1cm Muck (A9) (LI	
	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10) (I	•
	Histic (A3)				=1) (LRR O)	_		8) (outside MLRA 150A,B)
	gen Sulfide (A4)			ed Matrix (F		_		in Soils (F19) (LRR P, S, T)
	ed Layers (A5)		X Depleted M	•	-,	_	Anomalous Bright I	
	ic Bodies (A6) (LRR P, T, I	un.		Surface(F6)	_	(MLRA 153B)	20an, 00n3 (1 20)
	Mucky Mineral (A7) (LRR P	-		ark Surface	•		Red Parent Materia	al (TE2)
	Presence (A8) (LRR U)	', 1, 0)			` '	-		Surface (TF12) (LRR T, U)
_	` , ` ,			ressions (F8)	-		
	luck (A9) (LRR P, T)	4)	Marl (F10) ((BAL D.A. 454)	_	Other (Explain in R	emarks)
	ed Below Dark Surface (A1	1)		, ,	(MLRA 151)	o	21 11 4 61 1	
	Dark Surface (A12)	D 4 450 4\			s (F12) (LRR (O, P, 1)	•	phytic vegetation and
_	al Prairie Redox (A16) (ML	•			LRR P, T, U)		wetland hydrology r	·
	Mucky Mineral (S1) (LRR,	O, S)		c (F17) (ML	=		unless disturbed or	problematic
	Gleyed Matrix (S4)			· , ·	MLRA 150A, 1	•		
	Redox (S5)			•	oils (F19) (ML I	•		
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	ny Soils (F20)	(MLRA 149A	A, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)						
Restrictive	Layer (if observed):							
Type:								
Depth (i	nches):					Hydric Soi	Is Present? YE	ES <u>X</u> No
Remarks: s	treaking was observed star	rting at 7"+						
L	Corns of Engineers					A .1	1016	lain Region-Version 2.0

Project/Site: I-64 /High Rise Brid	<u>y</u> c	City/County: City of Chesapeake Sampling Date: 2/4/201							
Applicant/Owner: VDOT						State: VA	Sampling	Point:	WL-48, 50
Investigator(s): Glenn Wilson ar		<u>ewski</u> s	Section, Towns	ship, Range:					
	tidal floodplain		ocal relief (co				Slope (· -	0-1%
Subregion (LRR or MLRA): LRR 7			45' 32.21"	Lo	ng: <u>76°</u>	17' 20.96"	Datu	_	WGS 84
Soil Map Unit Name: Pocaty muck			nplex			NWI clas	sification: E2E	M1P	
Are climatic / hydrologic conditions or	n the site typical for th	is time of year?	Yes	X No		(If no, expl	ain in Remarks.)		
Are Vegetation,Soil	,or Hydrology	significantly disturb		Are	"Normal (Circumstances" pre	sent? Yes	Χ	No
Are Vegetation,Soil	,or Hydrology	naturally problemat	tic?	(If neede	ed, explain	any answers in Re	emarks.)		
SUMMARY OF FINDINGS-A	ttach site map sł	howing sampling p	point locat	ions, trans	sects, i	mportant featu	ıres, etc.		
Hydrophytic Vegetation Present?	Yes X	No							
Hydric Soil Present?	Yes X	No		Is the Samp	led Area				
Wetland Hydrology Present?	Yes X	No		Within a W	etland?	Yes	X No		
Remarks: Tidal E2EM Wetland Wetland lat and long were taken appi This wetland is located to the north of Near substation			il bore location	n)					
HYDROLOGY									
Wetland Hydrology Indicators:					Seco	ndary Indicators (r	ninimum of two re	equired)	
Primary Indicators (minimum of one i	is required; check all t	hat apply)				Surface Soil Crac	ks (B6)		
X Surface Water (A1)	Ac	quatic Fauna (B13)				Sparsely Vegetate	ed Concave Surfa	ace (B8))
X High Water Table (A2)	Ma	arl Deposits (B15) (LRR	? U)		X	Drainage Patterns	s (B10)		
X Saturation (A3)	_X_ Hy	drogen Sulfide Odor (C1	1)			Moss Trim Lines	(B16)		
Water Marks (B1)	Ox	kidized Rhizospheres on	Living Roots	(C3)		Dry-Season Water	er Table (C2)		
Sediment Deposits (B2)	Pr	esence of Reduced Iron	(C4)		Crayfish Burrows (C8)				
Drift Deposits (B3)	Re	ecent Reduction in Tilled	Soils (C6)			Saturation Visible	on Aerial Imager	y (C9)	
Algal Mat or Crust (B4)	Th	nin Muck Surface (C7)			X	Geomorphic Posi	tion (D2)		
Iron Deposits (B5)	Ot	her (Explain in Remarks	s)			Shallow Aquitard	(D3)		
Inundation Visible on Aerial Ima	agery (B7)				X	FAC-Neutral Test	(D5)		
X Water-Stained Leaves (B9)					_	Sphagnum moss	(D8) (LRR T, U)		
Field Observations:									
Surface Water Present? Yes	X No	Depth (inches):		2"					
Water Table Present? Yes	X No	Depth (inches):		0"					
Saturation Present? Yes	X No	Depth (inches):		0"	Wetland	Hydrology Preser	nt? Yes	Χ	No
(includes capillary fringe)		-1. (/				,	<u>-</u>		
Describe Recorded Data (stream gau	uge, monitoring well, a	erial photos, previous in	spections), if	available:					
Remarks:									

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
				Sampling date: 2/4/2014
Vegetation (Four Strata) - Us	o caiantifia namas of	nlants		Sampling point: WL-48, 50
vegetation (Four Strata) - Os	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	70 00001	ореско.	Otatao	That are OBL, FACW, or FAC: 2 (A)
				(\(\)
2.				Total number of Dominant
				Species across All Strata: 2 (B)
3.			-	\
				Percent of Dominant Species
4.	<u> </u>			That are OBL, FACW, or FAC: 100% (A/B)
·				
Total Cover: 0	50% of total cover	0%		
	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1. Baccharis halimifolia	2	Y	FAC	OBL species x 1 =
Groundseltree				FACW species x 2 =
2				FAC species x 3 =
	_			FACU species x 4 =
3				UPL species x 5 =
				Column Totals:(A)(B)
4				Prevalence Index = B/A =
5				H. Level, C. Wessele Co. L. Postero
Total Cover: 2	50% of total cover	40/		Hydrophytic Vegetation Indicators:
Total Cover: 2		1%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	0%		x 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹
Herb Stratum ()				
Spartina alterniflora Soltwater Cond Cross	90	<u> </u>	OBL	4 - Morphological Adaptations¹ (Provide supporting data
Saltwater Cord Grass 2. Phragmites australis		N	FACW	and Remarks or on a separate sheet) Problematic Hydrophytic Vegetation¹ (Explain)
Phragmites australis Common Reed	10	IN	FACW	Problematic Hydrophytic Vegetation (Explain)
3. Distichlis spicata		N	OBL	
Coastal Salt Grass		IN	OBL	
4.				¹ Indicators of hydric soil and wetland hydrology must
4.	_			be present
5.				Definitions of Four Vegetation Strata:
·	_			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.	 _			diameter at breast height (DBH), regardless of height.
·	_			diameter at broadt noight (BBH), regardless of height.
Total Cover: 105	50% of total cover	53%	-	Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	21%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()			-	, ,
1.				Herb - All herbaceous (non-woody) plants, regardless of size,
				and woody plants less than 3.28 ft tall.
2.				
	<u> </u>			Woody Vine - All woody vines greater than 3.28 ft in height.
3.				
4.				Hydrophytic
				Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
	20% of total cover	0%		
Remarks: (Include photo num	bers here or on a sepa	rate sheet.)		Herb (5-ft radius)
				Tierb (5-it radius)
				\longrightarrow
		Trees and \	/ines	
		(30-ft radi		
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	- 1	
	1			
		Sapling/Shr		
		(15-ft radiu	ıs)	
	l			

Project/Site:	I-64 /High Rise	Bridge Corridor	Study	

							Sampling date: 2/4	/2014		
							Sampling point: WL	-48, 50		
Soil										
Profile Des	scription: (Describe to the o	depth need	ded to document t	he indicator	or confirm th	e absence o	of indicators.)			
Depth	Matrix			Redox Fea	tures					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks		
)-12+	10YR 3/2	100					silt loam	many roots from 0-6"		
								-		
Type: C=C	oncentration, D=Depletion, F	RM=Reduc	ed Matrix, MS=Mas	sked Sand Gra	ains.		² Location: PL=Pore	Lining, M=Matrix.		
lydric Soil	Indicators: (Applicable to	all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydric	: Soils³:		
Histos	sol (A1)			Below Surface		_	1cm Muck (A9) (LR	R O)		
Histic	Epipedon (A2)		Thin Dark	Surface (S9)	(LRR S, T, U)	_	2cm Muck (A10) (L	RR S)		
Black	Histic (A3)		Loamy Mu	cky Mineral (F	1) (LRR O)	_	•	3) (outside MLRA 150A,B)		
X Hydro	gen Sulfide (A4)		Loamy Gle	yed Matrix (F2	2)	_	Piedmont Floodplair	Soils (F19) (LRR P, S, T)		
	ed Layers (A5)		X Depleted N			_	Anomalous Bright Lo	pamy Soils (F20)		
	ic Bodies (A6) (LRR P, T, U	-		k Surface(F6)			(MLRA 153B)			
	Mucky Mineral (A7) (LRR P,	T, U)		Oark Surface (I	F7)	_	Red Parent Material (TF2)			
	Presence (A8) (LRR U)			ressions (F8)		_	Very Shallow Dark Surface (TF12) (LRR T, U)			
	Muck (A9) (LRR P, T)		Marl (F10)			_	Other (Explain in Re	marks)		
	ted Below Dark Surface (A1	1)		Ochric (F11) (I	•					
_	Dark Surface (A12)			anese Masses						
	al Prairie Redox (A16) (MLF	-		rface (F13) (L			wetland hydrology must be present,			
	Mucky Mineral (S1) (LRR,	O, S)		ic (F17) (MLF	-	unless disturbed or problematic				
	Gleyed Matrix (S4)			/ertic (F18) (N		•				
	Redox (S5)			Floodplain Soi	. , .	•	A 452C 452D\			
	ed Matrix (S6)	n.	Anomalous	s Bright Loamy	/ Solis (F20)	(WLKA 149/	A, 153C, 153D)			
	Surface (S7) (LRR P, S, T, U	J)								
_	Layer (if observed):									
Type:										
Depth (i	inchas):					Hydric Sci	Is Present? YE	S X No		
Deptii (i	inches).					riyuric 30i	is rieseitt i L	3 <u>X</u> N0		
Remarks:										

Project/Site: I-64 /High Rise Brid	City/County: City of Chesapeake Sampling Date: 2/4/							2/4/2014		
Applicant/Owner: VDOT					State: VA	Sampling Point: WL-51				
Investigator(s): Glenn Wilson a		vski	Section, Tow	-						
Landform (hillslope, terrace, etc.):			*	oncave, conv		none	Slope	(%):	0-1%	
Subregion (LRR or MLRA): LRR		Lat: <u>3</u>	36° 45' 30.74	<u>"</u> Lo	ong: <u>76° 1</u>	17' 29.20"		tum:	WGS 8	
Soil Map Unit Name: Pocaty mucl	•					NWI class			and N/A	١
Are climatic / hydrologic conditions of	n the site typical for this	time of year?	Ye	s X No		(If no, expla	ain in Remarks.)		
Are Vegetation,Soil	,or Hydrology	significantly dis	sturbed?	Are	"Normal C	ircumstances" pre	sent? Yes	X	No	
Are Vegetation,Soil	or Hydrology	naturally proble	ematic?	(If neede	ed, explain	any answers in Re	emarks.)			
SUMMARY OF FINDINGS-A	ttach site man sh	owing samplin	ng point loca	tions, tran	sects. in	nportant featu	ıres. etc.			
Hydrophytic Vegetation Present?	Yes X	No	Эреше	, , , , , , , , , , , , , , , , , , , ,			,			
Hydric Soil Present?	Yes X	No	_	Is the Samp	oled Area					
Wetland Hydrology Present?	Yes X	No	_	Within a W		Yes	X No			
Remarks: Tidal E2EM5 Wetland (<i>Ph</i> Wetland lat and long were taken app This wetland is located to the north o	roximately in the middle	of the wetland (no	ot soil bore locati	on)						
HYDROLOGY										
Wetland Hydrology Indicators:					Secor	ndary Indicators (n	ninimum of two	required	d)	
Primary Indicators (minimum of one i	is required; check all the	at apply)				Surface Soil Crac	ks (B6)			
Surface Water (A1)	Aqu	atic Fauna (B13)				Sparsely Vegetate	ed Concave Sur	rface (B8	3)	
X High Water Table (A2)	Mar	l Deposits (B15) (I	LRR U)			Drainage Patterns	s (B10)			
X Saturation (A3)	Hyd	rogen Sulfide Odoi	r (C1)			Moss Trim Lines	(B16)			
Water Marks (B1)	Oxi	dized Rhizospheres	s on Living Root	s (C3)		Dry-Season Water	r Table (C2)			
Sediment Deposits (B2)	Pre	sence of Reduced	Iron (C4)			Crayfish Burrows	(C8)			
Drift Deposits (B3)	Rec	ent Reduction in T	illed Soils (C6)			Saturation Visible	on Aerial Image	ery (C9)		
Algal Mat or Crust (B4)	Thir	Muck Surface (C7	7)		X	Geomorphic Posi	tion (D2)			
Iron Deposits (B5)	Oth	er (Explain in Rema	arks)			Shallow Aquitard	(D3)			
Inundation Visible on Aerial Image	agery (B7)				<u>X</u>	FAC-Neutral Test	(D5)			
X Water-Stained Leaves (B9)						Sphagnum moss	(D8) (LRR T, U)		
Field Observations:										
Surface Water Present? Yes	No X	Depth (inches):	:	_						
Water Table Present? Yes	X No	Depth (inches):		6"						
Saturation Present? Yes	X No	Depth (inches):		6"	Wetland F	lydrology Presen	t? Yes	Χ	No	
(includes capillary fringe)		-1 - (,				-
Describe Recorded Data (stream gau	uge, monitoring well, ae	rial photos, previou	us inspections), i	f available:						
Remarks:										

Project/Sit	e:	I-64 /High Rise Bridg	ge Corridor St	udy	
		-		-	Sampling date: 2/4/2014
Venetation (F	our Ctrata) Had	a a la metifia mama a af	-leute		Sampling point: WL-51
vegetation (F	our Strata) - Use	e scientific names of Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	(Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.		70 0010.	<u> </u>	Clarac	That are OBL, FACW, or FAC: 3 (A)
2.					Total number of Dominant
					Species across All Strata: 3 (B)
3.					Percent of Dominant Species
4.		-			That are OBL, FACW, or FAC: 100% (A/B)
·					111at are GBE, 17tow, 0117to
Total Cove	er: 0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub	Stratum (ft)				Total % Cover of Multiply by:
1. Baccharis		5	<u> </u>	FAC	OBL species x 1 =
Groundsel 2.	tree				FACW species x 2 = FAC species x 3 =
Z					FACU species x 4 =
3.					UPL species x 5 =
					Column Totals: (A) (B)
4.					Prevalence Index = B/A =
5					Hydrophytic Vegetation Indicators:
Total Cove	er: 5	50% of total cover	3%		1 - Rapid Test for Hydrophytic Vegetation
Total Gove	,ı. <u>J</u>	20% of total cover	1%		x 2 - Dominance Test is >50%
Herb Stratum	()				3 - Prevalence Index is ≤3.0 ¹
	s australis	95	Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Common					and Remarks or on a separate sheet)
2.					Problematic Hydrophytic Vegetation¹ (Explain)
3					
					the disease of heading of lead continued headers are
4					¹Indicators of hydric soil and wetland hydrology must be present
5.					Definitions of Four Vegetation Strata:
·					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
Total Cove	er: 95	50% of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		20% of total cover	19%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine State 1. Lonicera ja		2	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
	Honeysuckle			<u> TAC</u>	and woody plants less than 3.28 ft tall.
2.	riorioyodonio				and woody planto look than 0.20 it tall.
					Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
4					Hydrophytic
Total Cove	er: 2	50% of total cover	1%		Vegetation Present? Yes X No
Total Cove	ði. Z	20% of total cover	0%		Present? Yes X No
Remarks: (Inc	lude photo numb	ers here or on a separ			
	iado prioto riarrio	5.5 5. 5. a. a 55pa.			Herb (5-ft radius)
			Trees and \	/ines	
			(30-ft radi		
			,	- ,	
		ſ	Cardin /cl		
			Sapling/Shr		
			(15-ft radiu	is)	

Project/Site: I-64 /High Rise Bridge Corridor Study

3011								
Profile Des	cription: (Describe to the	depth need	ed to document th	e indicator	or confirm th	e absence o	of indicators.)	
Depth	Matrix			Redox Fe	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-5	10YR 2/1	100					loam	few roots, some sand
5-13	10YR 3/1	100					fine sandy loam	
13+	10YR 4/3	100					loamy sand	
¹Type: C=Co	oncentration, D=Depletion,	RM=Reduce	ed Matrix, MS=Masl	ked Sand G	rains.		² Location: PL=Pore	Lining, M=Matrix.
Hydric Soil	Indicators: (Applicable t	o all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydri	c Soils³:
Histose	ol (A1)		Polyvalue B	elow Surfac	e (S8) (LRR \$	S, T, U)	1cm Muck (A9) (LF	RR O)
Histic I	Epipedon (A2)		Thin Dark S	urface (S9)	(LRR S, T, U		2cm Muck (A10) (L	.RR S)
Black I	Histic (A3)		Loamy Muc	ky Mineral (f	=1) (LRR O)		Reduced Vertic (F1	8) (outside MLRA 150A,B)
Hydrog	gen Sulfide (A4)		Loamy Gley	ed Matrix (F	2)	_	Piedmont Floodplai	n Soils (F19) (LRR P, S, T)
Statifie	ed Layers (A5)		X Depleted Ma	atrix (F3)		_	Anomalous Bright L	oamy Soils (F20)
Organi	ic Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6)		(MLRA 153B)	
5 cm N	Mucky Mineral (A7) (LRR P	P, T, U)	Depleted Da	ark Surface	(F7)	_	Red Parent Materia	l (TF2)
Muck F	Presence (A8) (LRR U)		Redox Depr	essions (F8)		Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm M	luck (A9) (LRR P, T)		Marl (F10) (LRR U)			Other (Explain in Re	emarks)
Deplet	ed Below Dark Surface (A1	11)	Depleted O	chric (F11)	(MLRA 151)			
Thick [Dark Surface (A12)		Iron-Mangai	nese Masse	s (F12) (LRR (O, P, T)	3Indicators of hydro	phytic vegetation and
Coasta	al Prairie Redox (A16) (ML	Umbric Surf	ace (F13) (LRR P, T, U)		wetland hydrology r	nust be present,	
Sandy	Mucky Mineral (S1) (LRR,	, O, S)	Delta Ochrid	(F17) (ML	RA 151)		unless disturbed or	problematic
Sandy	Gleyed Matrix (S4)		Reduced Ve	ertic (F18) (MLRA 150A, 1	50B)		
Sandy	Redox (S5)		Piedmont F	loodplain Sc	oils (F19) (ML	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	ny Soils (F20)	(MLRA 149A	A, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)						
Restrictive	Layer (if observed):							
Type:								
Depth (i	nches):					Hydric Soil	Is Present? YE	ES X No
								
Remarks: h	nigh concentration of oragai	nic material v	was observed throu	ghout	•			
LIC A	Corne of Engineers					A 41 41	and Cult Canadal D	Inia Danian Vancion 0.0

Project/Site: I-64 /High Rise Brid	City/County: City of Chesapeake Sampling Date: 2/4/2								
Applicant/Owner: VDOT						State: VA	Sampling I	Point: WL-52	
Investigator(s): Glenn Wilson an		ewski	Section, Town	nship, Range:					
Landform (hillslope, terrace, etc.): <u>f</u>				oncave, conve		none	Slope (%		
Subregion (LRR or MLRA): LRR T		Lat:	36° 45' 29.66'	<u>"</u> Lo	ng: <u>76° 1</u>	7' 22.86"	Datur		84
Soil Map Unit Name: Udorthents-L						NWI class		<u>1S</u>	
Are climatic / hydrologic conditions on	the site typical for the	nis time of year?	Ye				in in Remarks.)		
Are Vegetation,Soil,	or Hydrology	significantly d				cumstances" pre		X No _	
Are Vegetation,Soil,	or Hydrology	naturally prob	lematic?	(If neede	ed, explain a	ny answers in Re	marks.)		
SUMMARY OF FINDINGS-Att	tach site man s	howing sampli	ng point loca	tions tran	sects im	nortant featu	res etc		
Hydrophytic Vegetation Present?	Yes X	No	ing point loca	tions, train	30013, 1111	portant reate	103, 010.		
Hydric Soil Present?	Yes X	No		Is the Samp	oled Area				
Wetland Hydrology Present?	Yes X	No		Within a W		Yes	X No _		
	100 //			***************************************	otiuiiu.				
Remarks: PFO Wetland	avimataly in the mid	dla of the wetland (n	ot acil bara lacati	on)					
Wetland lat and long were taken appropriately a set and long were taken appropriately and lateral wetland is located to the north of				on)					
The wettand to located to the north of	TOTAIN GOOD NOT IN	avo a tidai i ilidorioo	,						
HYDROLOGY									
Wetland Hydrology Indicators:					Second	dary Indicators (m	ninimum of two re	auired)	
Primary Indicators (minimum of one is	required: check all	that apply)				Surface Soil Cracl		14	
Surface Water (A1)		quatic Fauna (B13)					ed Concave Surfa	ce (B8)	
High Water Table (A2)		larl Deposits (B15)	(LRR U)			Drainage Patterns		()	
X Saturation (A3)		ydrogen Sulfide Odd	. ,			Лoss Trim Lines (
Water Marks (B1)		xidized Rhizosphere		s (C3)		Dry-Season Wate			
Sediment Deposits (B2)		resence of Reduced	d Iron (C4) Crayfish Burrows (C8)						
Drift Deposits (B3)		ecent Reduction in					/ (C9)		
Algal Mat or Crust (B4)		hin Muck Surface (C				Geomorphic Posit		()	
Iron Deposits (B5)		ther (Explain in Ren				Shallow Aquitard (
Inundation Visible on Aerial Ima			,			AC-Neutral Test			
X Water-Stained Leaves (B9)						Sphagnum moss			
=: 11.01									
Field Observations:	N V	5 4 6 1	,						
Surface Water Present? Yes	No X	Depth (inches	· —						
Water Table Present? Yes _	No X	Depth (inches	· —	10"				V	
Saturation Present? Yes	X No	Depth (inches		10	Wetland Hy	drology Presen	t? Yes _	XNo	
(includes capillary fringe) Describe Recorded Data (stream gau	ge monitoring well	aerial photos previo	oue inepactions) i	f available:					
Describe Recorded Data (stream gau	ge, monitoring well, a	aeriai priotos, previc	ous mspections), i	i avallable.					
Remarks:									
r comando									

	Project/Site:	I-64 /High Rise Bride	ge Corridor St	udy	
	,			•	Sampling date: 2/4/2014
					Sampling point: WL-52
۷e	getation (Four Strata) - Use	e scientific names of	plants.		
		Absolute	Dominant	Indicator	Dominance Test worksheet:
	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	Liquidambar styraciflua	20	Y	FAC	That are OBL, FACW, or FAC:6(A)
	Sweet-Gum				
2.	Quercus falcata	15	Y	FACU	Total number of Dominant
	Southern Red Oak	<u> </u>		<u> </u>	Species across All Strata: 8 (B)
3.	Acer rubrum	10	Y	FAC	
	Red Maple	<u> </u>			Percent of Dominant Species
4.	Quercus phellos	5	N	FACW	That are OBL, FACW, or FAC: 75% (A/B)
	Willow Oak	<u></u>			
	Total Cover: 50	50% of total cover	25%	<u> </u>	
		20% of total cover	10%		Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)	<u> </u>			Total % Cover of Multiply by:
1.	Morella cerifera	10	Υ	FAC	OBL species x 1 =
	Southern Bayberry				FACW species x 2 =
2.	Vaccinium corymbosum	5	Y	FACW	FAC species x 3 =
	Highbush Blueberry				FACU species x 4 =
3.	Quercus nigra	3	N	FAC	UPL species x 5 =
	Water Oak	<u> </u>			Column Totals: (A) (B)
4.	Magnolia virginiana	3	N	FACW	Prevalence Index = B/A =
	Sweet-Bay				
5	Aralia spinosa	2	N	FAC	
	Devil's-Walkingstick				Hydrophytic Vegetation Indicators:
	Total Cover: 23	50% of total cover	12%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	5%		x 2 - Dominance Test is >50%
Не	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Pteridium aquilinum		Y	FACU	4 - Morphological Adaptations¹ (Provide supporting data
	Northern Bracken Fern				and Remarks or on a separate sheet)
2.	Phragmites australis		Y	FACW	Problematic Hydrophytic Vegetation¹ (Explain)
ļ	Common Reed			17.011	1 Tobismans Tryanspriyas Vogetation (Explain)
3.	<u>cenment reed</u>	_			
<u>ا</u> .		_			
4.		_			¹ Indicators of hydric soil and wetland hydrology must
''		_			be present
5.		_			Definitions of Four Vegetation Strata:
٥.					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
٥.					alamotor at stoast morgini (2217), rogaraloss of morgini
	Total Cover: 15	50% of total cover	8%		Sapling /Shrub - Woody plants, excluding vines, less than
	10101 00101.	20% of total cover	3%		3in. DBH and greater than 3.28 ft (1m) tall.
Wa	oody Vine Stratum ()	2070 0. 1010. 0010.	0,0		om 2211 and groater than electric term tam
1.	Smilax rotundifolia	15	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
	Horsebrier			1710	and woody plants less than 3.28 ft tall.
2.	11010001101				and woody planto loop than oleo it tall.
					Woody Vine - All woody vines greater than 3.28 ft in height.
3.		_			7 100 ay 1 100 ay 1 100 g. cator anan oi <u></u> 20 11 110 ig. 11
٥.					
4.		_			Hydrophytic
					Vegetation
	Total Cover: 15	50% of total cover	8%		Present? Yes X No
		20% of total cover	3%		
Re	marks: (Include photo numb				
	ee species are dying and/or o		iato oricot.)		Herb (5-ft radius)
110	or species are dying and or c	acaa			
			Trees and \		
			(30-ft radi	ius)	
			Caplina/CL	ub _	
			Sapling/Shr		
			(15-ft radiu	IS)	
		L			

Project/Site	L64 /High Ric	se Bridge Corridor St	tudy
riojeci/Site.	1-04 / MIGH KIS	se bilage Collian Si	luuy

3011									
Profile Des	cription: (Describe to the	depth need	ed to document the	he indicator	or confirm th	ne absence o	of indicators.)		
Depth	Matrix			Redox Fe	atures				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-4	10YR 3/1	100					loam		
4-7	10YR 4/1	100					sandy loam		
7-10	10YR 4/2	100					loamy sand		
10-16	10YR 6/3	100					loamy sand		
16+	10YR 5/2	100					loamy sand		
1T 0 0									
	oncentration, D=Depletion,				rains.	la dia ataua	² Location: PL=Pore Lini	<u> </u>	
_	Indicators: (Applicable t	o ali LKKS,		•	- (CO) (LDD (for Problematic Hydric So		
_	ol (A1)				e (S8) (LRR \$	_	1cm Muck (A9) (LRR C	•	
	Epipedon (A2)				(LRR S, T, U	' –	2cm Muck (A10) (LRR	•	
_	Histic (A3)			-	F1) (LRR O)	_	_ ` ` ' `	outside MLRA 150A,B)	
	gen Sulfide (A4)			yed Matrix (F	-2)	_	Piedmont Floodplain So		
_	ed Layers (A5)		X Depleted M	. ,		_	Anomalous Bright Loam	y Soils (F20)	
_	ic Bodies (A6) (LRR P, T,	-		Surface(F6	,		(MLRA 153B)		
	Mucky Mineral (A7) (LRR F	P, T, U)		ark Surface	. ,	_	Red Parent Material (TF	'	
	Presence (A8) (LRR U)			ressions (F8	3)	_	Very Shallow Dark Surfa		
	Muck (A9) (LRR P, T)		Marl (F10)			_	Other (Explain in Remai	ks)	
	ted Below Dark Surface (A	11)		, ,	(MLRA 151)				
_	Dark Surface (A12)			Iron-Manganese Masses (F12) (LRR O, P, T) 3Indicators of hydrophytic vegetation					
	al Prairie Redox (A16) (ML			Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present,					
	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochric (F17) (MLRA 151) unless disturbed or problematic						
	Gleyed Matrix (S4)				MLRA 150A,	-			
Sandy	Redox (S5)		Piedmont F	Toodplain So	oils (F19) (ML	RA 149A)			
Strippe	ed Matrix (S6)		Anomalous	Bright Loan	ny Soils (F20)	(MLRA 149A	A, 153C, 153D)		
Dark S	Surface (S7) (LRR P, S, T,	U)			ī				
Restrictive	Layer (if observed):								
Type:									
Depth (i	inches):					Hydric Soil	ls Present? YES	X No	
Remarks:									

Project/Site: I-64 /High Rise Bridge Corridor Study	City/County: City o			Sampling Date:	2/4/2014
Applicant/Owner: VDOT			tate: VA	Sampling Point:	: WL-53
Investigator(s): Glenn Wilson and David Kwasniewski	Section, Township, F	Range:			
Landform (hillslope, terrace, etc.): drainageway	Local relief (concave		none	Slope (%):	0-1%
Subregion (LRR or MLRA): LRR T Lat:	36° 45' 24.33"	Long: <u>76° 1</u>	7' 32.64"	Datum:	WGS 84
Soil Map Unit Name: Udorthents-Urban land complex			NWI classif	ication: N/A	
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes \(\simeg\)	<_No	(If no, explain	n in Remarks.)	
Are Vegetation,Soil,or Hydrologysignificantly d	disturbed?	Are "Normal Cir	cumstances" prese	ent? Yes X	No
Are Vegetation,Soil,or Hydrologynaturally prob	olematic? (If	needed, explain a	ny answers in Rem	narks.)	
SUMMARY OF FINDINGS-Attach site map showing sampli	ing point locations,	transects, im	portant feature	es, etc.	
Hydrophytic Vegetation Present? Yes X No					
Hydric Soil Present? Yes X No	Is the	Sampled Area			
Wetland Hydrology Present? Yes X No		n a Wetland?	Yes	X No	
Remarks: PFO Wetland Wetland lat and long were taken approximately in the middle of the wetland (r This wetland is located to the south of I-64 without a tidal influence Wildlife Meadow between railroad tracks	not soil bore location)				
HYDROLOGY					
Wetland Hydrology Indicators:		Second	lary Indicators (mir	nimum of two require	d)
Primary Indicators (minimum of one is required; check all that apply)		s	urface Soil Cracks	(B6)	
Surface Water (A1) Aquatic Fauna (B13)		8	parsely Vegetated	Concave Surface (B	8)
X High Water Table (A2) Marl Deposits (B15)	(LRR U)	[rainage Patterns (B10)	
X Saturation (A3) Hydrogen Sulfide Od	lor (C1)	N	loss Trim Lines (B	16)	
	res on Living Roots (C3)		ry-Season Water	Table (C2)	
X Sediment Deposits (B2) Presence of Reduced	d Iron (C4)	0	crayfish Burrows (C	(8)	
Drift Deposits (B3) Recent Reduction in	Tilled Soils (C6)	s	aturation Visible o	n Aerial Imagery (C9))
Algal Mat or Crust (B4) Thin Muck Surface (0	C7)		Seomorphic Positio	n (D2)	
Iron Deposits (B5) Other (Explain in Rer	marks)	s	hallow Aquitard (D	3)	
Inundation Visible on Aerial Imagery (B7)			AC-Neutral Test (D		
X Water-Stained Leaves (B9)		<u> </u>	phagnum moss (D	98) (LRR T, U)	
Field Observations:		1			
Surface Water Present? Yes No X Depth (inches	c)· _				
Water Table Present? Yes X No Depth (inches		-			
Saturation Present? Yes X No Depth (inches		Wetland Hy	drology Present?	Yes X	No
(includes capillary fringe)	3).	_ ''cliana'i'	arology i resem:	103 <u>X</u>	_110
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previo	ous inspections), if availal	ble:			
Second to the second se	ouoopoonoo,, u ana.				
Remarks: No hydrogen sulfide odor was found Water was at soil surface					

	Project/Site:	I-64 /High Rise Bride	ge Corridor St	udy	
	•	<u> </u>			Sampling date: 2/4/2014
					Sampling point: WL-53
Ve	getation (Four Strata) - Use	scientific names of	plants.		, •. —
	•	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	Pinus taeda	50	Y	FAC	That are OBL, FACW, or FAC: 5 (A)
	Loblolly Pine				()
2.	Acer rubrum		N	FAC	Total number of Dominant
	Red Maple			1710	Species across All Strata: 5 (B)
3.	rted Maple	_			(S)
٥.	·				Percent of Dominant Species
4.		_			That are OBL, FACW, or FAC: 100% (A/B)
4.					That are OBE, I ACW, OF I AC. (A/B)
	T-t-LO FF		000/		
	Total Cover: 55	50% of total cover	28%		Dravalance Index weaksheet.
_		20% of total cover	11%		Prevalence Index worksheet:
	pling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1.		15	Y	<u>FAC</u>	OBL species x 1 =
	Groundseltree	_			FACW species x 2 =
2.	Pinus taeda	10	Y	FAC	FAC species x 3 =
	Loblolly Pine				FACU species x 4 =
3.	Acer rubrum	3	N	FAC	UPL species x 5 =
	Red Maple				Column Totals: (A) (B)
4.					Prevalence Index = B/A =
		_		•	
5				-	
_					Hydrophytic Vegetation Indicators:
	Total Cover: 28	50% of total cover	14%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	6%		x 2 - Dominance Test is >50%
Ц а	rb Stratum ()	2070 Of total cover	070		3 - Prevalence Index is ≤3.0 ¹
1.	Phragmites australis	5	Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
_	Common Reed				and Remarks or on a separate sheet)
2.					Problematic Hydrophytic Vegetation¹ (Explain)
		_			
3.		_			
4.					¹ Indicators of hydric soil and wetland hydrology must
					be present
5.					Definitions of Four Vegetation Strata:
					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.		_			diameter at breast height (DBH), regardless of height.
		_	-		,, , , , , , , , , , , , , , , , , , , ,
	Total Cover: 5	50% of total cover	3%		Sapling /Shrub - Woody plants, excluding vines, less than
	10101 001011	20% of total cover	1%		3in. DBH and greater than 3.28 ft (1m) tall.
۱۸/	oody Vine Stratum ()	2070 01 10101 00101	170		om. BBIT and groater than 6.20 ft (1111) tail.
1.	Lonicera japonica	5	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
١.				170	, ,,,
2	Japanese Honeysuckle	_			and woody plants less than 3.28 ft tall.
2.	-				Weedy Vine All woody vines greater than 2.29 ft in height
_		_			Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
4.					Hydrophytic
					Vegetation
	Total Cover: 5	50% of total cover	3%		Present? Yes X No
		20% of total cover	1%		
Re	marks: (Include photo numb	ers here or on a sepa	rate sheet.)		Herb (5-ft radius)
					Tierb (5-it radius)
			Trees and \	/ines	
			(30-ft rad	ius)	
			Sapling/Shr	ub	
			(15-ft radiu		
			(13-11.19010	13)	

Danie - 4/014 - 1 04 / 111- Die - Daie	
roject/Site: I-64 /High Rise Bride	e Corridor Study

0011								
	cription: (Describe to the	depth need	ed to document th			ne absence o	of indicators.)	
Depth	Matrix			Redox Fe				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-3	10YR 4/1	100					loamy sand	
3-7	2.5YR 5/2	95	10YR 4/3	2			loamy sand	
7-18	10YR 4/3	100					loamy fine sand	
¹Type: C=Co	oncentration, D=Depletion,	RM=Reduce	d Matrix, MS=Mas	ked Sand G	rains.		² Location: PL=Pore Lin	ing, M=Matrix.
Hydric Soil	Indicators: (Applicable t	o all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydric S	oils³:
Histoso	ol (A1)		Polyvalue B	elow Surfac	ce (S8) (LRR	S, T, U)	1cm Muck (A9) (LRR	0)
Histic E	Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U)	2cm Muck (A10) (LRR	(S)
Black H	Histic (A3)		Loamy Muc	ky Mineral (F1) (LRR O)	_	Reduced Vertic (F18)	(outside MLRA 150A,B)
Hydrog	jen Sulfide (A4)		Loamy Gley	ed Matrix (F	- 2)	_	Piedmont Floodplain S	oils (F19) (LRR P, S, T)
Statifie	d Layers (A5)		X Depleted M	atrix (F3)		_	Anomalous Bright Loar	ny Soils (F20)
Organi	c Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6	5)		(MLRA 153B)	
5 cm M	lucky Mineral (A7) (LRR P	P, T, U)	Depleted Da	ark Surface	(F7)		Red Parent Material (T	F2)
Muck F	Presence (A8) (LRR U)		Redox Dep	ressions (F8	3)		Very Shallow Dark Sur	face (TF12) (LRR T, U)
1cm M	uck (A9) (LRR P, T)		Marl (F10) (LRR U)			Other (Explain in Rema	arks)
Deplete	ed Below Dark Surface (A1	11)	Depleted O	chric (F11)	(MLRA 151)		<u> </u>	
Thick D	Dark Surface (A12)		Iron-Manga	nese Masse	es (F12) (LRR	O, P, T)	3Indicators of hydrophy	tic vegetation and
Coasta	l Prairie Redox (A16) (ML	RA 150A)	Umbric Sur	face (F13)	(LRR P, T, U)		wetland hydrology mus	t be present,
Sandy	Mucky Mineral (S1) (LRR,	, O, S)	Delta Ochri	c (F17) (ML	-RA 151)		unless disturbed or pro	blematic
Sandy	Gleyed Matrix (S4)	•	Reduced Vo	ertic (F18) (MLRA 150A,	150B)	·	
	Redox (S5)		Piedmont F	loodplain So	oils (F19) (ML	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loan	ny Soils (F20)	(MLRA 149A	A, 153C, 153D)	
	urface (S7) (LRR P, S, T,	U)				•	•	
	Layer (if observed):							
Type:								
Depth (in	nches):					Hydric Soil	Is Present? YES	X No
	,					-		
Remarks:					•			

Project/Site: I-64 /High Rise B	ridge Corridor	Study	City/County:	City of Ches	sapeake		Sampling Date:		2/4/2014
Applicant/Owner: VDOT						State: VA	Sampling Point:	WL-54	
Investigator(s): Glenn Wilson		asniewski	Section, Tow	nship, Range:					
Landform (hillslope, terrace, etc.):			_ `	concave, conve	. ,	none	Slope (%):	0-1%	
Subregion (LRR or MLRA): LRR		Lat:	36° 45′ 21.56	"Lon	ng: <u>76° 1</u>	7' 20.78"	Datum:	WGS 8	34
Soil Map Unit Name: Udorthents			.,	V		NWI classificati			
Are climatic / hydrologic conditions			Ye			(If no, explain in I	,	NI-	
Are Vegetation ,Soil ,Soil ,Soil	or Hydrology, or Hydrology	significantly naturally pro				rcumstances" present? any answers in Remarks	Yes X	_ NO	
Are Vegetation,Soil	,or rivarology	naturally pro	bierriatic:	(II Heedel	u, explain a	ally allowers in Remarks	5.)		
SUMMARY OF FINDINGS-	Attach site ma	ap showing samp	ling point loca	tions, trans	sects, in	portant features,	etc.		
Hydrophytic Vegetation Present?	Yes X	· · · ·			•	•			
Hydric Soil Present?	Yes X	No		Is the Sampl	led Area				
Wetland Hydrology Present?	Yes X			Within a We	etland?	Yes X	No	_	
Remarks: PEM5 Wetland (<i>Phragm</i> Wetland lat and long were taken at This wetland is located to the south Adjacent to railroad	pproximately in the	middle of the wetland (on)					
HYDROLOGY									
Wetland Hydrology Indicators:						dary Indicators (minimu		d)	
Primary Indicators (minimum of on	e is required; chec					Surface Soil Cracks (B6	•		
X Surface Water (A1)	_	Aquatic Fauna (B13				Sparsely Vegetated Cor	•	8)	
X High Water Table (A2) X Saturation (A3)	X	Marl Deposits (B15)	-			Drainage Patterns (B10))		
X Saturation (A3) Water Marks (B1)	_^	Hydrogen Sulfide Oo Oxidized Rhizosphe		c (C3)		Moss Trim Lines (B16) Dry-Season Water Tabl	e (C2)		
Sediment Deposits (B2)		Presence of Reduce	=	3 (00)		Crayfish Burrows (C8)	C (OZ)		
Drift Deposits (B3)	_	Recent Reduction in			_	Saturation Visible on Ae	erial Imagery (C9))	
Algal Mat or Crust (B4)		Thin Muck Surface (Geomorphic Position (D			
Iron Deposits (B5)		Other (Explain in Re				Shallow Aquitard (D3)	,		
Inundation Visible on Aerial I	Imagery (B7)	• .	,			FAC-Neutral Test (D5)			
X Water-Stained Leaves (B9)					_	Sphagnum moss (D8) (I	LRR T, U)		
Field Observations:				I					
Surface Water Present? Yes	X No	Depth (inche	es):	2"					
Water Table Present? Yes	X No	Depth (inche	· —	0"					
Saturation Present? Yes	X No	Depth (inche	es):	0"	Wetland H	lydrology Present?	Yes X	No	
(includes capillary fringe)	'		'						
Describe Recorded Data (stream g	gauge, monitoring v	well, aerial photos, prev	ious inspections), i	f available:					
Remarks.									

	Project/Site:	I-64 /High Rise Bride	ge Corridor St	udy	
	,				Sampling date: 2/4/2014
					Sampling point: WL-54
Ve	getation (Four Strata) - Use	scientific names of	plants.		
		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	e Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	Pinus taeda	10	Υ	FAC	That are OBL, FACW, or FAC:6(A)
	Loblolly Pine				
2.					Total number of Dominant
					Species across All Strata: 6 (B)
3.					
			-		Percent of Dominant Species
4.	-	_			That are OBL, FACW, or FAC: 100% (A/B)
		_			(
	Total Cover: 10	50% of total cover	5%		
	10101 001011	20% of total cover	2%		Prevalence Index worksheet:
Sai	oling /Shrub Stratum (ft)	2070 01 10101 00101	270		Total % Cover of Multiply by:
5aլ 1.		5		FAC	OBL species x 1 =
١.	Groundseltree				FACW species x 2 =
2.			Y	- FAC	
۷.	Morella cerifera		<u>r</u>	FAC	FACIl preside
_	Southern Bayberry				FACU species x 4 =
3.	Pinus taeda		Y	FAC	UPL species x 5 = (2)
	Loblolly Pine				Column Totals:(A)(B)
4.					Prevalence Index = B/A =
_					
5					
		-			Hydrophytic Vegetation Indicators:
	Total Cover: 9	50% of total cover	5%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	2%		x 2 - Dominance Test is >50%
He	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Phragmites australis	80	Υ	FACW	4 - Morphological Adaptations ¹ (Provide supporting data
	Common Reed				and Remarks or on a separate sheet)
2.	Panicum virgatum	5	Y	FAC	Problematic Hydrophytic Vegetation¹ (Explain)
	Wand Panic Grass				, , , , , , , , , , , , , , , , , , , ,
3.		_			
4.		_			¹ Indicators of hydric soil and wetland hydrology must
•	-				be present
5.	-				Definitions of Four Vegetation Strata:
٠.	-				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
Ο.					diameter at broadt height (BBH), regardless of height.
	Total Cover: 85	50% of total cover	43%		Sapling /Shrub - Woody plants, excluding vines, less than
	Total Cover. 65	20% of total cover	43% 17%		
١٨/	andy \/ina Stratum ()	20% of total cover	1770		3in. DBH and greater than 3.28 ft (1m) tall.
	ody Vine Stratum ()				Herb All borbosses (non-used) \ nlente regardless of size
1.					Herb - All herbaceous (non-woody) plants, regardless of size,
_		_			and woody plants less than 3.28 ft tall.
2.					
_					Woody Vine - All woody vines greater than 3.28 ft in height.
3.		_			
		_			
4.					Hydrophytic
					Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
		20% of total cover	0%		
Re	marks: (Include photo numb	ers here or on a sepa	rate sheet.)		Herb (5-ft radius)
					Herb (5-1t radius)
			Trees and \	linos	
			(30-ft rad	145)	
		_			
			Sapling/Shr	ub	
			(15-ft radiu		
			(13-11.19010	13)	

Project/Site:	1-64 /High F	Rise Bridge	Corridor Study	

Soil									
Profile Des	cription: (Describe to the	depth need	ed to document tl	ne indicator	or confirm th	e absence of	f indicators.)		
Depth	Matrix			Redox Fea	atures				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks	
0-3	10YR 4/2	100					loamy sand		
3-10	10YR 6/2	100					sand	medium grain	
10-16+	10YR 6/1	100					sand	medium grain	
¹Tvpe: C=Co	oncentration, D=Depletion,	RM=Reduce	ed Matrix. MS=Mas	ked Sand Gr	ains.		² Location: PL=Por	e Lining, M=Matrix.	
	Indicators: (Applicable to		•			Indicators 1	for Problematic Hydi	<u> </u>	
Histose	٠	- u <u>-</u> o,		•	e (S8) (LRR S		1cm Muck (A9) (L		
_	Epipedon (A2)		Thin Dark Surface (S9) (LRR S, T, U)			· · · —	2cm Muck (A10) (LRR S)		
	Histic (A3)		Loamy Mucky Mineral (F1) (LRR O)			_	Reduced Vertic (F18) (outside MLRA 150A,B)		
	gen Sulfide (A4)		Loamy Gleyed Matrix (F2)			_	Piedmont Floodplain Soils (F19) (LRR P, S, T)		
	ed Layers (A5)						Anomalous Bright Loamy Soils (F20)		
_	ic Bodies (A6) (LRR P, T, U	IN.	X Depleted Matrix (F3) Redox Dark Surface(F6)						
_	Mucky Mineral (A7) (LRR P	-		` '			(MLRA 153B)		
	Presence (A8) (LRR U)	, 1, 0)	Depleted Dark Surface (F7) Redox Depressions (F8)				Red Parent Material (TF2) Very Shallow Dark Surface (TF12) (LRR T, U)		
			Marl (F10) (` ,	,	_	Other (Explain in F		
	luck (A9) (LRR P, T) ed Below Dark Surface (A1	1)			MI DA 151\	_	_ Other (Explain in F	(enarks)	
	,	1)		chric (F11) ((F12) (LRR () D T)	3Indicators of budr	anhytic vogetation and	
Thick Dark Surface (A12)					ophytic vegetation and				
Coastal Prairie Redox (A16) (MLRA 150A)			Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present, Delta Ochric (F17) (MLRA 151) unless disturbed or problematic						
	Mucky Mineral (S1) (LRR,	0, 3)	Reduced Vertic (F18) (MLRA 150A, 150B)						
						-			
	Redox (S5)		Piedmont Floodplain Soils (F19) (MLRA 149A) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)						
	ed Matrix (S6)	118	Anomaious	Dilgiil Loaiii	y 30115 (F20)	(IVILKA 149A	, 1930, 1930)		
	Surface (S7) (LRR P, S, T,	0)							
_	Layer (if observed):								
Type:									
Donth /	nahaa).					Hydric Soils Present? YES X No			
Depth (inches):			Hy			Hydric Soils	s Present?	ES <u>X</u> No	
Remarks:									
Remarks.									

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/4/2014 State: VA Applicant/Owner: VDOT Sampling Point: WL-55, 56 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Local relief (concave, convex, none): Slope (%): 0-1% none 36° 45' 32.35" Subregion (LRR or MLRA): LRR T Lat: __ Long: 76° 17' 13.65" Datum: **WGS 84** Soil Map Unit Name: Dragston-Urban land complex and Pocaty mucky peat NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation _,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation _ ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes Wetland Hydrology Present? Yes X Within a Wetland? Remarks: Tidal E2EM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the north of I-64 within tidal waters **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: **0**" Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Water is at soil surface

Project/Site:	I-64 /High Rise Brid	ge Corridor Sti	udy	
				Sampling date: 2/4/2014
Vagatation (Four Strata) LL	sa sajantifia namas af	nlants		Sampling point: WL-55, 56
Vegetation (Four Strata) - U	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)		Species?	Status	Number of Dominant species
1.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<u> </u>		That are OBL, FACW, or FAC: 2 (A)
				, , ,
2.				Total number of Dominant
				Species across All Strata: 2 (B)
3				
				Percent of Dominant Species
4				That are OBL, FACW, or FAC: 100% (A/B)
T-t-LO	F00/ -f+-+-l	00/		
Total Cover: 0	50% of total cover 20% of total cover	0% 0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)	20% of total cover	0%		Total % Cover of Multiply by:
1.				OBL species x 1 =
		· ——		FACW species x 2 =
2.		·		FAC species x 3 =
				FACU species x 4 =
3.				UPL species x 5 =
				Column Totals: (A) (B)
4				Prevalence Index = B/A =
_				
5		<u> </u>		H. Level, C. Wesselder, L. Perter.
Total Cover: 0	50% of total cover	0%		Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation
Total Cover. 0	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()	20 % Of total cover	076		3 - Prevalence Index is ≤3.0 ¹
1. Spartina alterniflora		Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data
Saltwater Cord Grass		· — · —		and Remarks or on a separate sheet)
Phragmites australis		Y	FACW	Problematic Hydrophytic Vegetation¹ (Explain)
Common Reed		·		· resternance rijuroprijne vegetanem (±/p/am/)
3.		· ·		
4.				¹ Indicators of hydric soil and wetland hydrology must
				be present
5				Definitions of Four Vegetation Strata:
		<u> </u>		Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.				diameter at breast height (DBH), regardless of height.
Total Cover: 100	50% of total cover	50%		Sapling /Shrub - Woody plants, excluding vines, less than
Total Cover. 100	20% of total cover	20%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()	2070 01 10101 00101	2070		on. BBT and greater than 6.20 ft (111) tall.
1.				Herb - All herbaceous (non-woody) plants, regardless of size,
				and woody plants less than 3.28 ft tall.
2.				
				Woody Vine - All woody vines greater than 3.28 ft in height.
3				
4		<u> </u>		Hydrophytic
Total Cover: 0	50% of total cover	0%		Vegetation Present? Yes X No
Total Cover. 0	20% of total cover	0%		Present? Yes X No
Remarks: (Include photo num				
Phragmites australis ws obse		rate enect.)		Herb (5-ft radius)
	3			
		Trees and V	/ines	
		(30-ft radi		
		(30-it laul	1431	
	1			
		Sapling/Shr		
		(15-ft radiu	ıs)	
	l			

Project/Site:	I-64 /High R	se Bridge	Corridor	Study	

Sampling date: <u>2/4/2014</u>
Sampling point: <u>WL-55, 56</u>

Soil									
Profile Des	cription: (Describe to the	depth need	ed to document tl	he indicator	or confirm th	e absence o	of indicators.)		
Depth	Matrix			Redox Fea	atures				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks	
0-4	10YR 3/1	100	(11)				organic	many roots	
4-16+	10YR 3/1	100					silt loam	many rooto	
4-10+	1011 3/1	100					Siit iOairi	-	
								-	
¹Type: C=C	oncentration, D=Depletion,	RM=Reduce	ed Matrix, MS=Mas	ked Sand Gr	ains.		² Location: PL=Por	e Lining, M=Matrix.	
Hydric Soil	Indicators: (Applicable t	to all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hyd	ric Soils³:	
Histose	ol (A1)		Polyvalue E	Below Surface	e (S8) (LRR \$	S, T, U)	1cm Muck (A9) (L	.RR O)	
Histic I	Epipedon (A2)		Thin Dark Surface (S9) (LRR S, T, U)				2cm Muck (A10) (LRR S)		
_	Histic (A3)		Loamy Mucky Mineral (F1) (LRR O)				Reduced Vertic (F18) (outside MLRA 150A,B)		
	gen Sulfide (A4)					_	Piedmont Floodplain Soils (F19) (LRR P, S, T)		
			Loamy Gleyed Matrix (F2)						
	ed Layers (A5)	110	X Depleted Matrix (F3)				Anomalous Bright Loamy Soils (F20)		
	ic Bodies (A6) (LRR P, T,	-	Redox Dark Surface(F6) Depleted Dark Surface (F7)				(MLRA 153B)		
	Mucky Mineral (A7) (LRR F	2, 1, 0)			. ,	_	Red Parent Material (TF2)		
	Presence (A8) (LRR U)			ressions (F8))	_	Very Shallow Dark Surface (TF12) (LRR T, U)		
1cm Muck (A9) (LRR P, T)			Marl (F10)			_	Other (Explain in F	Remarks)	
	ted Below Dark Surface (A	11)		chric (F11) (
Thick Dark Surface (A12)			Iron-Manga	nese Masses	s (F12) (LRR (O, P, T)	³ Indicators of hydrophytic vegetation and		
Coastal Prairie Redox (A16) (MLRA 150A)				face (F13) (I	must be present,				
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochric (F17) (MLRA 151) unless disturbed or problematic						
Sandy	Gleyed Matrix (S4)	Reduced Vertic (F18) (MLRA 150A, 150B)							
Sandy	Redox (S5)		Piedmont F	loodplain So	ils (F19) (ML I	RA 149A)			
Strippe	ed Matrix (S6)		Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)						
Dark S	Surface (S7) (LRR P, S, T,	U)							
Restrictive	Layer (if observed):								
Type:	, , ,								
-77									
Depth (i	inches):		Hydric So				ils Present? YES X No		
Doptii (i	mones).					riyane oon	o i resenti	<u> </u>	
Remarks:									
ixemans.									

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/4/2014 State: VA Sampling Point: WL-57 Applicant/Owner: VDOT Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Local relief (concave, convex, none): Slope (%): 0-1% none 36° 45' 29.17" Subregion (LRR or MLRA): LRR T Lat: Long: 76° 17' 11.49" Datum: **WGS 84** Soil Map Unit Name: Dragston-Urban land complex NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation _,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation _ ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? Hydric Soil Present? Is the Sampled Area Yes Wetland Hydrology Present? Yes X No Within a Wetland? Remarks: Tidal E2EM5 Wetland (Phragmites australis dominant) Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the north of I-64 within tidal waters Portion within overhead utility easement Potential sub-surface tidal connection **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

Project/Site:	I-64 /High Rise Brid	ge Corridor Stu	udy	
•		<u> </u>	,	Sampling date: 2/4/2014 Sampling point: WL-57
Vegetation (Four Strata) - Us	se scientific names of	plants.		Sampling point. <u>WE-57</u>
()	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1				That are OBL, FACW, or FAC: (A)
				Total growth on of Department
2				Total number of Dominant Species across All Strata: 2 (B)
3.				Species across All Strata:2 (B)
ა				Percent of Dominant Species
4.				That are OBL, FACW, or FAC: 100% (A/B)
-				,
Total Cover: 0	50% of total cover	0%		
	20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1	<u> </u>			OBL species x 1 = FACW species x 2 =
2.	-			FAC v species x z = FAC species x 3 =
Z				FACU species x 4 =
3.	_			UPL species x 5 =
				Column Totals: (A) (B)
4.	<u> </u>			Prevalence Index = B/A =
5				H. Level, C. Wesselder, L. Pesters
Total Cover: 0	50% of total cover	0%		Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation
Total Cover. 0	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum ()	2070 01 10141 00701	070		3 - Prevalence Index is ≤3.0¹
Phragmites australis	90	Y	FACW	4 - Morphological Adaptations¹ (Provide supporting data
Common Reed	<u> </u>			and Remarks or on a separate sheet)
2.				Problematic Hydrophytic Vegetation¹ (Explain)
3				
4.				¹Indicators of hydric soil and wetland hydrology must
5.				be present Definitions of Four Vegetation Strata:
J				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.				diameter at breast height (DBH), regardless of height.
Total Cover: 90	50% of total cover	45%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	18%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()	_			Hank All banks are see (and see all all and a second a second and a second a second and a second a second and
Lonicera japonica Japanese Honeysuckle	5	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
2.				and woody plants less than 3.28 ft tall.
			-	Woody Vine - All woody vines greater than 3.28 ft in height.
3.				, and
4.				Hydrophytic
				Vegetation
Total Cover: 5	50% of total cover 20% of total cover	3% 40/		Present? Yes X No
Remarks: (Include photo num		1% rate sheet)		
Lonicera japonica ws observe		rate sheet.)		Herb (5-ft radius)
	3			
		Trees and V	/ines	
		(30-ft radi		
		,55	-,	
		CI: /C!		
		Sapling/Shr		
		(15-ft radiu	5)	

Sampling date: 2/4/2014
Sampling point: WL-57

Soil								
Profile Des	cription: (Describe to the	depth need	ed to document the	ne indicator	or confirm th	e absence of	f indicators.)	
Depth	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-5	10YR 3/1	100					loam	many roots
5-10	10YR 5/1	100					loamy sand	roots common
10-15+	10YR 4/1	100					sand	
10 101	101111/1	100					Garia	-
								-
								-
1T 0 0	- D. Davistica	DM Dadies	- A Matrice MC Man		-1		21ti DI D	a Linia a MA Matrix
	oncentration, D=Depletion,		•		ains.			e Lining, M=Matrix.
-	Indicators: (Applicable t	o all LRRs,		-	(00) (100		for Problematic Hyd	
	ol (A1)				e (S8) (LRR S		1cm Muck (A9) (L	•
	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10)	•
Black	Histic (A3)		Loamy Muc	ky Mineral (F	1) (LRR O)	_		18) (outside MLRA 150A,B)
Hydro	gen Sulfide (A4)		Loamy Gley	ed Matrix (F2	2)		Piedmont Floodpla	ain Soils (F19) (LRR P, S, T)
Statifie	ed Layers (A5)		X Depleted M	atrix (F3)			Anomalous Bright	Loamy Soils (F20)
Organ	ic Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6))		(MLRA 153B)	
5 cm N	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface (F7)		Red Parent Materi	al (TF2)
Muck	Presence (A8) (LRR U)		Redox Dep	ressions (F8))		Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm M	Muck (A9) (LRR P, T)		Marl (F10) ((LRR U)		_	Other (Explain in F	Remarks)
Deplet	ted Below Dark Surface (A1	11)	Depleted O	chric (F11) (MLRA 151)			
Thick	Dark Surface (A12)		Iron-Manga	nese Masses	(F12) (LRR (O, P, T)	3Indicators of hydro	ophytic vegetation and
Coasta	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Sur	face (F13) (L	LRR P, T, U)		wetland hydrology	must be present,
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (MLi	RA 151)		unless disturbed o	r problematic
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18) (N	MLRA 150A, 1	50B)		
Sandy	Redox (S5)		Piedmont F	Toodplain Soi	ils (F19) (MLI	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)				•		
	Layer (if observed):							
Type:	.,. (,							
<u></u>								
Denth (inches):					Hydric Soils	s Present? Y	ES X No
<u> Bopin (</u>						riyano com		<u> </u>
Remarks:					<u>I</u>			
. tomanto.								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/4/2014 Applicant/Owner: VDOT State: VA Sampling Point: WL-58 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Local relief (concave, convex, none): Slope (%): 0-1% none 36° 45' 25.34" WGS 84 Subregion (LRR or MLRA): LRR T Lat: Long: 76° 17' 10.23" Datum: Soil Map Unit Name: Dragston-Urban land complex and Munden-Urban land complex NWI classification: PEM1R Are climatic / hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.) No Are Vegetation __ ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation _ ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes Wetland Hydrology Present? Yes X Within a Wetland? Remarks: Tidal E2EM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the south of I-64 within tidal waters Chesapeake Land Development (Tidal Mitigation Site) HYDROLOGY Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0' Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

	Project/Site:	I-64 /High Rise Bride	ge Corridor St	udy	
	-	<u> </u>			Sampling date: 2/4/2014
					Sampling point: WL-58
۷e	getation (Four Strata) - Use	scientific names of	plants.		
	-	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	· · · · · · · · · · · · · · · · · · ·				That are OBL, FACW, or FAC: 3 (A)
		_			
2.		_	-		Total number of Dominant
	-				Species across All Strata: 3 (B)
3.					Openies delega / III etiala.
J.					Percent of Dominant Species
,					
4.					That are OBL, FACW, or FAC: 100% (A/B)
	Total Cover: 0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
	pling /Shrub Stratum (ft)	_			Total % Cover of Multiply by:
1.	Baccharis halimifolia	2	Y	FAC	OBL species x 1 =
	Groundseltree				FACW species x 2 =
2.	Morella cerifera	2	Υ	FAC	FAC species x 3 =
	Southern Bayberry				FACU species x 4 =
3.	, ,	_			UPL species x 5 =
	-	<u> </u>			Column Totals: (A) (B)
4.					Prevalence Index = B/A =
••		_		·	. 1014101100 1114011
5	-	_			
5					Hudronbutis Vanetation Indicators.
	Tatal Carran	F00/ -f+-+-	00/		Hydrophytic Vegetation Indicators:
	Total Cover: 4	50% of total cover	2%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	1%		x 2 - Dominance Test is >50%
He	r <u>b Stratum ()</u>				3 - Prevalence Index is ≤3.0 ¹
1.	Spartina patens	95	Y	FACW	4 - Morphological Adaptations ¹ (Provide supporting data
	Salt-Meadow Cord Grass			·	and Remarks or on a separate sheet)
2.	Juncus roemerianus	10	N	OBL	Problematic Hydrophytic Vegetation¹ (Explain)
	Roemer's Rush	_			
3.					
٠.	-	_			
4.		_			¹ Indicators of hydric soil and wetland hydrology must
٦.					be present
5.		_			Definitions of Four Vegetation Strata:
J.					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
^					
6.					diameter at breast height (DBH), regardless of height.
	T : 10		====		0 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
	Total Cover: 105	50% of total cover	53%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	21%		3in. DBH and greater than 3.28 ft (1m) tall.
Wc	ody Vine Stratum ()	_			
1.		_			Herb - All herbaceous (non-woody) plants, regardless of size,
					and woody plants less than 3.28 ft tall.
2.					
		-			Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
		_			
4.		_			Hydrophytic
••	-	_			Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
	10141 001011	20% of total cover	0%		
D۵	marks: (Include photo numb				
	ccharis halimifolia and More	•	,	of the wetle	nd Herb (5-ft radius)
Dа	ccrians naiminolla and wore	na cemera are iouno a	along the edge	e or the wetta	III
					\longrightarrow
			Trees and \	/ines	
			(30-ft radi	ius)	
			(55 17 184)		
		Г			
			Sapling/Shr	ub	
			(15-ft radiu		
			,	,	

Drojoot/Cito:	LG4 /Ligh Digo!	Bridge Corridor Study	

Sampling date: 2/4/2014
Sampling point: WL-58

Depth	Matrix			Redox Fea	itures		of indicators.)	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-3	10YR 3/1	100					clay loam	many roots, organic
3-8	10YR 2/1	100					sandy clay loam	roots common
8-12	10YR 5/1	100					fine sandy clay	
12-16+	10YR 6/1	85	10YR 5/4	15			fine sandy clay	
					 			
	concentration, D=Depletion,		•		ains.	lu di antara	² Location: PL=Pore	<u>.</u>
•	I Indicators: (Applicable to	o ali LKKS,		•	(CO) /I DD (for Problematic Hydri	
Histosol (A1) Polyvalue Below Surface Histic Epipedon (A2) Thin Dark Surface (S9)						_	1cm Muck (A9) (LI	·
						_	2cm Muck (A10) (L	
	Histic (A3)			ky Mineral (F		-	•	8) (outside MLRA 150A,B)
	gen Sulfide (A4)			ed Matrix (F2	<u>-)</u>	-	-	n Soils (F19) (LRR P, S, T)
	ed Layers (A5)		X Depleted Ma			_	Anomalous Bright I	Loarny Solis (FZU)
	ic Bodies (A6) (LRR P, T, U	-		Surface(F6)			(MLRA 153B)	L/TF2)
	Mucky Mineral (A7) (LRR P	r, ı, u)		ark Surface (•	-	Red Parent Materia	` '
	Presence (A8) (LRR U)			essions (F8)		_		Surface (TF12) (LRR T, U)
	Muck (A9) (LRR P, T)	(4)	Marl (F10) (•	MI DA 454\	_	Other (Explain in R	ernarks)
	ted Below Dark Surface (A1	1)		chric (F11) (•	. D. T.	21	
	Dark Surface (A12)	D A 450A\			(F12) (LRR (J, P, 1)	•	phytic vegetation and
	al Prairie Redox (A16) (ML	•			.RR P, T, U)		wetland hydrology r	' '
-	Mucky Mineral (S1) (LRR,	0, 5)		(F17) (MLF	•	EOD)	unless disturbed or	problematic
-	Gleyed Matrix (S4)			. , .	/ILRA 150A, 1	•		
	Redox (S5)			•	ls (F19) (MLI	•	A 4500 450D)	
	ed Matrix (S6)		Anomaious	Bright Loam	y Solis (F20)	(IVILKA 149/	A, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	U)						
_	Layer (if observed):							
Type:								
Depth (inches):					Hydric Soi	Is Present? YE	ES X No
Deptii (inches).					riyuric 30i	is rieseitt it	<u> </u>
Remarks:								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/4/2014 State: VA Applicant/Owner: VDOT Sampling Point: WL-59, 60, 61 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): Slope (%): 0-1% none 36° 45' 29.08" WGS 84 Subregion (LRR or MLRA): LRR T Lat: Long: 76° 17' 00.88" Datum: Soil Map Unit Name: Dragston-Urban land-Tomotley complex NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation ____ _,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation _ ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PEM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the north of I-64 and does not have a tidal influence Within overhead utility easement Potential sub-surface tidal connection (tidal influence was not observed during fieldwork) **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: 3" Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

Project/Site:	I-64 /High Rise Bridg	ge Corridor Sti	udy	
				Sampling date: 2/4/2014 Sampling point: WL-59, 60, 61
Vegetation (Four Strata) - Use				
Tree Stratum (Plot sizes: ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant species
1				That are OBL, FACW, or FAC:3(A)
2.				Total number of Dominant Species across All Strata: 4 (B)
3.				
4.				Percent of Dominant Species That are OBL, FACW, or FAC:75%(A/B)
Total Cover: 0	50% of total cover	0% 0%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1. Morella cerifera	5	<u> </u>	FAC	OBL species x 1 =
Southern Bayberry				FACW species x 2 =
2				FAC species x 3 =
				FACU species x 4 =
3.				UPL species x 5 =
				Column Totals: (A) (B)
4.				Prevalence Index = B/A =
5				
				Hydrophytic Vegetation Indicators:
Total Cover: 5	50% of total cover	3%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	1%		X 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
Dichanthelium spp.	35		UPL	4 - Morphological Adaptations¹ (Provide supporting data
1. Біспапінениті эрр.			UFL	
0			ODI	and Remarks or on a separate sheet)
2. Juncus effusus	25	<u> </u>	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
Lamp Rush				
3. Rubus spp.	10	N	FAC	
Blackberry				
4. Arundinaria gigantea	5	N	FACW	Indicators of hydric soil and wetland hydrology must
Giant Cane 5. Eupatorium capillifolium			FACU	be present Definitions of Four Vegetation Strata:
Dog-Fennel				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6. Ludwigia alternifolia Seedbox	3	N	OBL	diameter at breast height (DBH), regardless of height.
7 Solidago spp.	2	N	FACU	
Goldenrod			17100	
8				
Total Cover: 85	50% of total cover 20% of total cover	43% 17%		Sapling /Shrub - Woody plants, excluding vines, less than 3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()	_0,001 10101 00101	/0		
1. Lonicera japonica	2	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
Japanese Honeysuckle			1 //	and woody plants less than 3.28 ft tall.
				and woody plants icos than 3.20 it tall.
2				Manda Mana Allama I. J. and a control of the contro
3.	_			Woody Vine - All woody vines greater than 3.28 ft in height.
4.				Hydrophytic
				Vegetation
Total Cover: 2	50% of total cover	1%		Present? Yes X No
	20% of total cover	0%		
Remarks: (Include photo numb				Herb (5-ft radius)
		Trees and V	/ines	
	l			$\downarrow \rightarrow \downarrow $
	Г			
		Sapling/Shr	ub	
		(15-ft radiu		
	L			

Project/Site:	1-64 /High F	Rise Bridge	Corridor Study	

Sampling date: 2/4/2014
Sampling point: WL-59, 60, 61

Soil									
Profile Des	cription: (Describe to the	depth need	ed to document tl	he indicator	or confirm th	e absence o	f indicators.)		
Depth	Matrix			Redox Fea	atures				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks	
0-4	10YR 4/1	100	()	,,,	- 7/2		fine sandy loam		
			10YR 5/6	10					
4-16+	10YR 6/2	90	10113/6	10			fine sandy loam		
¹Tvpe: C=C	oncentration, D=Depletion,	RM=Reduce	d Matrix. MS=Mas	ked Sand Gr	ains.		² Location: PL=Pore Lin	ing, M=Matrix.	
- ''	Indicators: (Applicable t		,			Indicators	for Problematic Hydric So	<u> </u>	
*	ol (A1)	to an Errito,		,	e (S8) (LRR S		1cm Muck (A9) (LRR (
_	` '						_		
	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10) (LRR	•	
_	Histic (A3)			ky Mineral (F		_		(outside MLRA 150A,B)	
Hydro	gen Sulfide (A4)		Loamy Gley	yed Matrix (F	2)	_	Piedmont Floodplain So	oils (F19) (LRR P, S, T)	
Statifie	ed Layers (A5)		X Depleted M	latrix (F3)			Anomalous Bright Loan	ny Soils (F20)	
Organ	ic Bodies (A6) (LRR P, T,	U)	Redox Dark	k Surface(F6))		(MLRA 153B)		
5 cm N	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface ((F7)		Red Parent Material (T	F2)	
Muck I	Presence (A8) (LRR U)		Redox Dep	ressions (F8))		Very Shallow Dark Surf	face (TF12) (LRR T, U)	
	fluck (A9) (LRR P, T)		Marl (F10)	(LRR U)			Other (Explain in Rema	arks)	
	ted Below Dark Surface (A	11)		chric (F11) (MI RA 151)		(····,	
	Dark Surface (A12)	,		` ' '	s (F12) (LRR () P T)	3Indicators of hydrophyt	tic vegetation and	
_		DA 150A)				,,,,,,	³ Indicators of hydrophytic vegetation and wetland hydrology must be present,		
_	al Prairie Redox (A16) (ML	•			LRR P, T, U)		·	•	
	Mucky Mineral (S1) (LRR	, 0, 8)		c (F17) (ML	=		unless disturbed or pro	biematic	
	Gleyed Matrix (S4)			· , ·	VILRA 150A, 1	•			
Sandy	Redox (S5)		Piedmont F	Toodplain So	ils (F19) (MLF	RA 149A)			
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	i, 153C, 153D)		
Dark S	Surface (S7) (LRR P, S, T,	U)							
Restrictive	Layer (if observed):								
Type:									
Depth (i	inches).					Hydric Soils	s Present? VES	X No	
Doptii (i	inonosj.					riyano oon	311030111. 120	<u> </u>	
Remarks:									
inciliains.									

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/5/2014 State: VA Applicant/Owner: VDOT Sampling Point: WL-62 Investigator(s): David Kwasneiwski and Glenn Wilson Section, Township, Range: 0-1% Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): Subregion (LRR or MLRA): LRR T 36° 45' 29.65" Long: 76° 16' 31.18" WGS 84 Lat: Datum:

Soil Map Unit Name: Acredale	e-Urban Land comp	olex and Tomotley-Urban la	and complex	NWI classification: N/A
Are climatic / hydrologic condition	ons on the site typical for	r this time of year?	Yes X No	(If no, explain in Remarks.)
Are Vegetation,Soil	or Hydrology	significantly disturbed?	Are	e "Normal Circumstances" present? Yes X No
Are Vegetation,Soil	or Hydrology	naturally problematic?	(If need	led, explain any answers in Remarks.)
SUMMARY OF FINDING	S-Attach site map	showing sampling point	locations, tra	nsects, important features, etc.
Hydrophytic Vegetation Present		No		
Hydric Soil Present?	Yes X	No	Is the Sam	pled Area
Wetland Hydrology Present?	Yes X	No	Within a W	/etland? Yes X No No
Remarks: PFO Wetland Wetland lat and long were taker Wetland is located south of I-64		niddle of the wetland (not soil bore	e location)	
HYDROLOGY				
Wetland Hydrology Indicators	:			Secondary Indicators (minimum of two required)
Primary Indicators (minimum of	one is required; check a	all that apply)		Surface Soil Cracks (B6)
X Surface Water (A1)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
X High Water Table (A2)	<u> </u>	Marl Deposits (B15) (LRR U)		X Drainage Patterns (B10)
X Saturation (A3)	<u> </u>	Hydrogen Sulfide Odor (C1)		Moss Trim Lines (B16)
Water Marks (B1)	<u> </u>	Oxidized Rhizospheres on Living	Roots (C3)	Dry-Season Water Table (C2)
Sediment Deposits (B2)	<u> </u>	Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
X Drift Deposits (B3)	<u> </u>	Recent Reduction in Tilled Soils	(C6)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	<u> </u>	Thin Muck Surface (C7)		Geomorphic Position (D2)
Iron Deposits (B5)		Other (Explain in Remarks)		Shallow Aquitard (D3)
Inundation Visible on Aeria	al Imagery (B7)			FAC-Neutral Test (D5)
X Water-Stained Leaves (BS	9)			Sphagnum moss (D8) (LRR T, U)
Field Observations:				T
Surface Water Present? Ye	es X No	Depth (inches):	3"	
Water Table Present? Ye	es X No	Depth (inches):	0"	
Saturation Present? Ye	es X No	Depth (inches):	0"	Wetland Hydrology Present? Yes X No
(includes capillary fringe)		•		
Describe Recorded Data (stream	n gauge, monitoring we	II, aerial photos, previous inspect	ions), if available:	
Remarks: Data recorded in Febr	ruary, with over 0.5" of p	precip in the previous week.		

Project/Site:	I-64 /High Rise Bridg	ge Corridor St	udy	
-				Sampling date: <u>2/5/2014</u>
				Sampling point: WL-62
Vegetation (Four Strata) - U	Ise scientific names			
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)) % Cover	Species?	Status	Number of Dominant species
1. Liquidambar styraciflua	25	Υ	FAC	That are OBL, FACW, or FAC:6(A)
sweet gum				
2. Pinus taeda	20	Υ	FAC	Total number of Dominant
loblolly pine				Species across All Strata:6(B)
3. Acer rubrum	15	Υ	FAC	
red maple				Percent of Dominant Species
4.				That are OBL, FACW, or FAC: 100% (A/B)
				, , ,
Total Cover: 60	50% of total cover	30%		
	20% of total cover	12%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1. Acer rubrum	35	Y	FAC	OBL species x 1 =
red maple				FACW species x 2 =
2.				FAC species x 3 =
				FACU speciesx 4 =
3.	_			UPL species
	_			Column Totals: (A) (B)
l				Prevalence Index = B/A =
				. Totalonoo indox = B/X =
,				Hydrophytic Vegetation Indicators:
Total Cover: 35	50% of total cover	18%		1 - Rapid Test for Hydrophytic Vegetation
Total Cover. 33	20% of total cover	7%		x 2 - Dominance Test is >50%
Lank Charters ()	20 /6 OI lotal cover	1 /0		
Herb Stratum ()				3 - Prevalence Index is ≤3.0¹
1. <u>Toxicodendron radicans</u>	40	Y	FAC	4 - Morphological Adaptations¹ (Provide supporting data
poison ivy			E40)4/	and Remarks or on a separate sheet)
2. Cinna arundinacea	3	N	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
sweet wood reed				
3				
	_			
4	_			1Indicators of hydric soil and wetland hydrology must
-	_			be present
5	_			Definitions of Four Vegetation Strata:
	_			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
S				diameter at breast height (DBH), regardless of height.
Total Cover: 43	50% of total cover	22%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	9%		3in. DBH and greater than 3.28 ft (1m) tall.
Noody Vine Stratum ()				
I. Lonicera japonica	3	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
Japanese honeysuckle				and woody plants less than 3.28 ft tall.
2.				
				Woody Vine - All woody vines greater than 3.28 ft in height.
3.				
4. <u> </u>				Hydrophytic
<u> </u>				Vegetation
Total Cover: 3	50% of total cover	2%		Present? Yes X No
	20% of total cover	1%		
Remarks: (Include photo nur			1	
,				Herb (5-ft radius)
		Trees and		
		(30-ft rad	dius)	
		Sapling/Shr	uh _	
		(15-ft radiu	12)	
	L			

Sampling date: 2/5/2014
Sampling point: WL-62

Soil								
Profile Des	cription: (Describe to the	depth need	ed to document th	ne indicator	or confirm th	e absence of	f indicators.)	
Depth	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-3	10YR 3/1	100					sandy loam	wet
3-8	10YR 5/1	55	10YR 4/4	45			sandy loam	wet
8-12	10YR 5/1	95	10YR 3/4	5			sandy clay loam	wet
12-16	10YR 5/1	98	10YR 3/4	2			clay	wet
12 10	1011(3/ 1		10111 3/4				ciay	WCt
					-			
1T 0 0					 		31 .: DI D	
	oncentration, D=Depletion,		•		ains.		² Location: PL=Por	
_	Indicators: (Applicable to	o ali LRRS, i		•			for Problematic Hydr	
Histoso	, ,				e (S8) (LRR S	_	_ 1cm Muck (A9) (L	·
Histic I	Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U)	_	_ 2cm Muck (A10) (LRR S)
	Histic (A3)		Loamy Muc	ky Mineral (F	1) (LRR O)	_	Reduced Vertic (F	18) (outside MLRA 150A,B)
Hydrog	gen Sulfide (A4)		Loamy Gley	ed Matrix (F	2)		Piedmont Floodpla	nin Soils (F19) (LRR P, S, T)
Statifie	d Layers (A5)		X Depleted M	atrix (F3)		_	Anomalous Bright	Loamy Soils (F20)
Organi	c Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6))		(MLRA 153B)	
5 cm N	Mucky Mineral (A7) (LRR P	P, T, U)	Depleted Da	ark Surface ((F7)		Red Parent Materia	al (TF2)
Muck F	Presence (A8) (LRR U)		Redox Dep	ressions (F8))		Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm M	uck (A9) (LRR P, T)		Marl (F10) ((LRR U)			Other (Explain in F	Remarks)
	ed Below Dark Surface (A1	11)	Depleted O	chric (F11) (MLRA 151)		_ ` '	,
Thick [Dark Surface (A12)	,		. , ,	s (F12) (LRR C	D. P. T)	3Indicators of hydro	ophytic vegetation and
	al Prairie Redox (A16) (ML	RA 150A)			LRR P, T, U)	-, - , -,	wetland hydrology	
	Mucky Mineral (S1) (LRR,	,		c (F17) (ML I	· · · · · · · · ·		unless disturbed o	•
	Gleyed Matrix (S4)	, 0, 0,			VLRA 150A, 1	50B)	uniess disturbed o	problematic
					ils (F19) (MLF	•		
	Redox (S5)			•	. , .	•	152C 152D)	
	ed Matrix (S6)		Anomaious	Bright Loan	y 30115 (F20) 1	(IVILKA 149A	, 153C, 153D)	
	urface (S7) (LRR P, S, T,	U)			1			
_	Layer (if observed):							
Type:								
Depth (i	nches):					Hydric Soils	s Present? Y	ES <u>X</u> No
Remarks:	no odors observed							

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 10/7/2013 Applicant/Owner: VDOT State: VA Sampling Point: WL-63 Investigator(s): David Kwasneiwski and Glenn Wilson Section, Township, Range: 0-1% Landform (hillslope, terrace, etc.): Toe of Slope Local relief (concave, convex, none): concave Slope (%): Long: 76° 16' 26.14" WGS 84 36° 45' 31.35" Subregion (LRR or MLRA): LRR T Lat: Datum: Soil Map Unit Name: Dragston-Urban land-Tomotley complex and Tomotley-Urban land complex N/A NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? (If no, explain in Remarks.) or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation naturally problematic? (If needed, explain any answers in Remarks.) or Hydrology SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Is the Sampled Area Yes Wetland Hydrology Present? Yes No Within a Wetland? Yes Remarks: PFO Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) Wetland is located south of I-64 without a tidal influence This is an unmaintained roadside ditch within a forested area **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Χ Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Χ Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Χ Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Yes Depth (inches): 6" 6" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

Project/Site:	I-64 /High Rise Brid	ge Corridor St	tudy	
	· · · · ·	3		Sampling date:10/7/2013
				Sampling point: WL-63
Vegetation (Four Strata)				
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes:		Species?	Status	Number of Dominant species
Liquidambar styraciflu	<u>40</u>	<u> </u>	FAC	That are OBL, FACW, or FAC: 6 (A)
Sweet-gum			FAC	T-t-1
2. Acer rubrum	35	<u> </u>	FAC	Total number of Dominant
Red Maple				Species across All Strata: 6 (B)
3			-	Percent of Dominant Species
4.				That are OBL, FACW, or FAC: 100% (A/B)
·			-	111dt die GBE, 17tevv, 6117te(7VB)
Total Cover: 75	50% of total cover	38%		
	20% of total cover	15%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft	t)			Total % Cover of Multiply by:
1. Acer rubrum	15	Y	FAC	OBL species x 1 =
Red Maple				FACW species x 2 =
2. Quercus nigra	5	Y	FAC	FAC species x 3 =
Water Oak				FACU species x 4 =
Liquidambar styraciflu	<u>2</u>	N	FAC	UPL species x 5 =
Sweet-Gum				Column Totals: (A) (B)
4				Prevalence Index = B/A =
5				Hydrophytic Veretation Indicators
Total Cover: 22	50% of total cover	11%		Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation
Total Cover. 22	20% of total cover	11% 4%		x 2 - Dominance Test is >50%
Herb Stratum ()	20 % Of total cover	4 /0	-	3 - Prevalence Index is ≤3.0 ¹
Her <u>b Stratum ()</u> 1. <i>Saururus cernuus</i>		Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data
Lizard's-Tail			OBL	and Remarks or on a separate sheet)
2.				Problematic Hydrophytic Vegetation¹ (Explain)
Z	<u> </u>			1 Toblematic Hydrophytic Vegetation (Explain)
3.				
	<u> </u>			
4.				¹ Indicators of hydric soil and wetland hydrology must
	_			be present
5.				Definitions of Four Vegetation Strata:
				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6				diameter at breast height (DBH), regardless of height.
	_ 			
Total Cover: 60	50% of total cover	30%		Sapling /Shrub - Woody plants, excluding vines, less than
M t -) / O (t /)	20% of total cover	12%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				Harb All harbassaus (non woody) plants, regardless of size
Smilax rotundifolia Horsebrier	3	<u> </u>	FAC	Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
2.				and woody plants less than 5.26 it tall.
Z				Woody Vine - All woody vines greater than 3.28 ft in height.
3.				Troody vine 7th woody vines greater than 6.25 it in hoight.
4.	<u> </u>	-		Hydrophytic
·				Vegetation
Total Cover: 3	50% of total cover	2%		Present? Yes X No
	20% of total cover	1%		
Remarks: (Include photo r		eparate sheet	.)	Hank /F ft and the ch
		T	\ (:	Herb (5-ft radius)
		Trees and		
		(30-ft rad	dius)	
	Γ			
		Sapling/Shr		
		(15-ft radiu	ıs)	
	L			

Sampling date: 10/7/2013
Sampling point: WL-63

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Soil								
Profile Des	cription: (Describe to the	depth need	ed to document tl	ne indicator	or confirm th	e absence of	f indicators.)	
Depth	Matrix			Redox Fea	itures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-2	Gley1 5/N	90	10YR 3/3	10			Clay loam	moist
2-6	10YR 3/1	100		,			loam	many roots, moist
6-14+	10YR 4/1	100		_			sand	medium grain sand, wet
								-
1Typo: C-C	oncentration, D=Depletion,	PM-Poduos	d Motrix MC_Moo	kad Sand Cr	nino		2Location: DL - Dor	e Lining, M=Matrix.
			•		allis.	lu di actoro i		*
	Indicators: (Applicable to	o ali LKKS, i		•	(CO) (LDD (for Problematic Hyd	
Histoso	` '				(S8) (LRR S	· · · · —	1cm Muck (A9) (L	•
	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10)	•
	Histic (A3)			ky Mineral (F				18) (outside MLRA 150A,B)
— ´ `	gen Sulfide (A4)			ed Matrix (F2	2)	_	_	ain Soils (F19) (LRR P, S, T)
_	d Layers (A5)		X Depleted M	. ,		_		Loamy Soils (F20)
Organi	c Bodies (A6) (LRR P, T, U	J)	Redox Dark	Surface(F6)			(MLRA 153B)	
5 cm N	Mucky Mineral (A7) (LRR P	, T, U)	Depleted D	ark Surface (I	F7)	_	Red Parent Mater	· /
Muck F	Presence (A8) (LRR U)		Redox Dep	ressions (F8)		_	Very Shallow Dark	Surface (TF12) (LRR T, U)
1cm M	uck (A9) (LRR P, T)		Marl (F10) ((LRR U)		_	Other (Explain in F	Remarks)
Deplet	ed Below Dark Surface (A1	1)	Depleted O	chric (F11) (I	MLRA 151)			
Thick [Dark Surface (A12)		Iron-Manga	nese Masses	(F12) (LRR (O, P, T)	3Indicators of hydr	ophytic vegetation and
Coasta	al Prairie Redox (A16) (ML	RA 150A)	Umbric Sur	face (F13) (L	RR P, T, U)		wetland hydrology	must be present,
Sandy	Mucky Mineral (S1) (LRR,	O, S)	Delta Ochri	c (F17) (MLF	RA 151)		unless disturbed of	r problematic
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18) (N	/ILRA 150A, 1	150B)		
Sandy	Redox (S5)		Piedmont F	loodplain Soi	ls (F19) (MLI	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loamy	y Soils (F20)	(MLRA 149A	, 153C, 153D)	
Dark S	urface (S7) (LRR P, S, T,	U)						
Restrictive	Layer (if observed):							
Type:	,							
				_				
Depth (i	nches):					Hydric Soils	s Present? Y	ES X No
(.						,		<u> </u>
Remarks:					<u> </u>			

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/5/2014 State: VA Sampling Point: WL-64 Applicant/Owner: VDOT Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Local relief (concave, convex, none): none Slope (%): 0-1% 36° 45' 44.68" WGS 84 Subregion (LRR or MLRA): LRR T Lat: ___ Long: 76° 16' 13.21" Datum: Soil Map Unit Name: Udorthents-Urban land complex NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation __ ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PFO Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the north of I-64 and does not have a tidal influence Adjacent to ramp **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

Proj	ect/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
	· · · · · · · · · · · · · · · · · · ·	•			Sampling date: 2/5/2014
					Sampling point: WL-64
Vegetati	ion (Four Strata) - Us	e scientific names of	plants.		
		Absolute	Dominant	Indicator	Dominance Test worksheet:
	atum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1. <i>Ace</i>	r rubrum	60	Y	FAC	That are OBL, FACW, or FAC:6 (A)
Red	l Maple	_			
	ıidambar styraciflua	20	Y	FAC	Total number of Dominant
Swe	eet-Gum	<u> </u>			Species across All Strata: 6 (B)
3.					
		<u> </u>			Percent of Dominant Species
4.		<u> </u>			That are OBL, FACW, or FAC: 100% (A/B)
		<u> </u>			
Tota	al Cover: 80	50% of total cover	40%		
		20% of total cover	16%		Prevalence Index worksheet:
Sapling	/Shrub Stratum (ft)				Total % Cover of Multiply by:
	ella cerifera	30	Y	FAC	OBL species x 1 =
	thern Bayberry				FACW species x 2 =
	r rubrum			FAC	FAC species x 3 =
	Maple				FACU species x 4 =
3.	ΙΝαριο	_			UPL species x 5 =
o			· 		Column Totals: (A) (B)
4.		_			Prevalence Index = B/A =
¬					Trevalence index = B/A =
5					
³					Hydrophytic Vegetation Indicators:
Tota	al Cover: 45	50% of total cover	23%		1 - Rapid Test for Hydrophytic Vegetation
1018	il Cover. 45				
		20% of total cover	9%		x 2 - Dominance Test is >50%
Herb Str					3 - Prevalence Index is ≤3.0 ¹
	cus effusus	2	Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data
	np Rush				and Remarks or on a separate sheet)
2.			. <u></u>		Problematic Hydrophytic Vegetation¹ (Explain)
3.		<u> </u>			
		<u> </u>			
4.					¹ Indicators of hydric soil and wetland hydrology must
		<u> </u>			be present
5.		<u> </u>			Definitions of Four Vegetation Strata:
		<u> </u>			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
Tota	al Cover: 2	50% of total cover	1%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	0%		3in. DBH and greater than 3.28 ft (1m) tall.
Woodv \	/ine Stratum ()				
	icodendron radicans		Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
-	tern Poison Ivy		· 		and woody plants less than 3.28 ft tall.
2.	tom r diddir ivy	_			and woody planto look than 0.20 it tall.
<u>-</u>		_	· -		Woody Vine - All woody vines greater than 3.28 ft in height.
3.					Troody Tille 7 til Woody Tillos greater than 6.20 ft in Height.
J		_	· -		
4.		-		-	Hydrophytic
T			· 		
Tota	al Cover: 10	50% of total cover	5%		Vegetation Present? Yes X No
1016	al Cover. 10				Present? Yes X No
Domork	a. (Include phote num	20% of total cover	2%		
		bers here or on a sepa	rate sneet.)		Herb (5-ft radius)
rees ar	e buttrussed				
					\longrightarrow
			Trees and \	/ines	
			(30-ft rad	ius)	
			,35 11144	,	
		ı			
			Sapling/Shr	ub	
			(15-ft radiu	ıs)	
		l	,		

Drojoct/Sito:	I 64 /High I	Dico Bridgo	Corridor Stud	4.7
Project/Site:	1-64 /mian i	Rise bilade	Corridor Stud	av V

Sampling date: 2/5/2014
Sampling point: WL-64

	scription: (Describe to the	depth need	ed to document th			e absence o	f indicators.)	
Depth	Matrix			Redox Fea				
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-3	10YR 3/2	100					fine sandy loam	
3-8	10YR 4/1	90	10YR 4/4	5			sandy clay loam	
			10YR 5/6	5			sandy clay loam	
8-12	10YR 5/1	90	10YR 4/4	5			sandy clay loam	
			10YR 5/6	5			sandy clay loam	
1Tumas C. C	Concentration D. Donletion	DM Dadua	ad Matrix, MC, Maa	lead Cand Cr			21 agations DI Dava Lining	a M Matrix
	Concentration, D=Depletion, I Indicators: (Applicable t		·		allis.	Indicators	² Location: PL=Pore Lining for Problematic Hydric Soil	•
	sol (A1)	to all Livivs,		•	e (S8) (LRR S		1cm Muck (A9) (LRR O)	
_	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10) (LRR S	
	Histic (A3)			ky Mineral (F	-	_	Reduced Vertic (F18) (or	
				-		_		· · · · · · · · · · · · · · · · · · ·
_ '	gen Sulfide (A4)			ed Matrix (F.	2)	_	Piedmont Floodplain Soil	
	ed Layers (A5)	118	X Depleted M	` ,		_	_ Anomalous Bright Loamy (MLRA 153B)	7 Solis (F20)
_	nic Bodies (A6) (LRR P, T,	-		Surface(F6)			,	
	Mucky Mineral (A7) (LRR F	2, 1, 0)		ark Surface (•	_	Red Parent Material (TF2	•
	Presence (A8) (LRR U)			ressions (F8))	_	Very Shallow Dark Surface	
1 cm Muck (A9) (LRR P, T) Marl (F10) (LRR U) X Depleted Below Dark Surface (A11) Depleted Ochric (F11) (N			MI DA 454\	_	Other (Explain in Remark	(S)		
	ted Below Dark Surface (A	11)		` ' '	•) D T\	3Indicators of budrophytic	vagatation and
	Dark Surface (A12)	DA 150A)			s (F12) (LRR (L RR P, T, U)	J, P, 1)	³ Indicators of hydrophytic wetland hydrology must b	-
	al Prairie Redox (A16) (ML	•					, 0,	'
	Mucky Mineral (S1) (LRR	, 0, 3)		c (F17) (ML I		EOD)	unless disturbed or proble	ematic
	Gleyed Matrix (S4)				MLRA 150A, 1	-		
	/ Redox (S5)			•	ils (F19) (MLI	•	4500 4500)	
	ed Matrix (S6)		Anomaious	Bright Loam	y Solis (F20)	(MLRA 149A	A, 153C, 153D)	
	Surface (S7) (LRR P, S, T,	, U)						
_	Layer (if observed):							
Type:								
Donth ((inches):					Hydric Soil:	c Drocont? VES \	(No
Deptil ((inches):					nyuric Son	s Present? YES <u>></u>	<u> </u>
Remarks:								
rtomanto.								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/5/2014 State: VA Applicant/Owner: VDOT Sampling Point: WL-65 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Local relief (concave, convex, none): Slope (%): 0-1% none 36° 45' 46.82" Subregion (LRR or MLRA): LRR T Lat: ___ Long: 76° 16' 11.82" Datum: **WGS 84** Soil Map Unit Name: Udorthents-Urban land complex PFO1A NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation __ ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PFO Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the north of I-64 and does not have a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0' Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	_
		J	,	Sampling date: 2/5/2014
				Sampling point: WL-65
Vegetation (Four Strata) - U	se scientific names of	plants.		. •
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1. Acer rubrum	40	Y	FAC	That are OBL, FACW, or FAC: 4 (A)
Red Maple				
2. Liquidambar styraciflua	15	Y	FAC	Total number of Dominant
Sweet-Gum		·		Species across All Strata: 4 (B)
3.				(2)
<u> </u>				Percent of Dominant Species
4.		· 		
4				That are OBL, FACW, or FAC: 100% (A/B)
Total Cover: 55	500/ -f+-+-l	000/		
Total Cover: 55	50% of total cover	28%		Dunandaman la dan mankak anti
	20% of total cover	11%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)		· 		Total % Cover of Multiply by:
1. Acer rubrum	30	Y	FAC	OBL species x 1 =
Red Maple				FACW species x 2 =
2. Liquidambar styraciflua	5	N	FAC	FAC species x 3 =
Sweet-Gum				FACU species x 4 =
3.				UPL species x 5 =
				Column Totals: (A) (B)
4.		·		Prevalence Index = B/A =
5	_	-		
				Hydrophytic Vegetation Indicators:
Total Cover: 35	50% of total cover	18%		1 - Rapid Test for Hydrophytic Vegetation
Total Cover. 35	20% of total cover	7%		x 2 - Dominance Test is >50%
	20% of total cover	170		
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
Arundinaria gigantea	2	Y	FACW	
Giant Cane				and Remarks or on a separate sheet)
2				Problematic Hydrophytic Vegetation ¹ (Explain)
1	· ·			
3.				
-				
4.				¹ Indicators of hydric soil and wetland hydrology must
	_	-		be present
5.		· ·		Definitions of Four Vegetation Strata:
o				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.				diameter at breast height (DBH), regardless of height.
0.				diameter at breast neight (DBH), regardless of height.
T-t-LO	500/ -f t-t-l	40/		Continu (Chrysh - Wandy plants avaluating visual loss than
Total Cover: 2	50% of total cover	1%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	0%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()		. <u></u>		
1				Herb - All herbaceous (non-woody) plants, regardless of size,
		<u> </u>		and woody plants less than 3.28 ft tall.
2		<u> </u>		
	<u> </u>			Woody Vine - All woody vines greater than 3.28 ft in height.
3.	· ·			
4.				Hydrophytic
				Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
	20% of total cover	0%		
Remarks: (Include photo nur				
rtemants. (include prioto nai	ilbers fiere or off a sepa	rate sricet.)		Herb (5-ft radius)
				\longrightarrow
		Trees and \	/ines	
		(30-ft rad	ius)	
		,==,,,,,,,	,	
		Sapling/Shr	ub	- / /
		(15-ft radiu		
		•	·	

Project/Site: I-64 /High Rise B	ridge Corridor Study
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Sampling date: 2/5/2014
Sampling point: WL-65

Destile Des				!!!			of in diseases.	
	cription: (Describe to the	aeptn neea	ea to aocument t			ne absence c	of indicators.)	
Depth	Matrix			Redox Fe				
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remarks
0-3	10YR 3/2	98	10YR 3/4	2			loam	
3-6	10YR 4/1	90	10YR 3/4	10			loam	
6-10	10YR 5/1	80	10YR 3/4	20			fine sandy loam	
10-12+	10YR 6/1	80	7.5YR 4/6	20			clay	
¹Type: C=Co	oncentration, D=Depletion,	RM=Reduce	d Matrix, MS=Mas	ked Sand G	Grains.		² Location: PL=Pore Lini	ng, M=Matrix.
Hydric Soil	Indicators: (Applicable t	o all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydric So	oils³:
Histose	ol (A1)		Polyvalue E	Below Surfa	ce (S8) (LRR	S, T, U)	1cm Muck (A9) (LRR C	9)
Histic I	Epipedon (A2)				(LRR S, T, U		2cm Muck (A10) (LRR	
	Histic (A3)				(F1) (LRR O)	′ –		outside MLRA 150A,B)
_	gen Sulfide (A4)		Loamy Gle	-		_	Piedmont Floodplain So	
_ ` `	ed Layers (A5)		X Depleted M		-,	_	Anomalous Bright Loam	
_	ic Bodies (A6) (LRR P, T,	11/		ιαιτίχ (F3) < Surface(Fi	8)	_	(MLRA 153B)	19 00113 (1 20)
_		-	Depleted D		-			23)
	Mucky Mineral (A7) (LRR F	-, 1, 0)			` '	_	Red Parent Material (TF	•
	Presence (A8) (LRR U)			ressions (F	3)	_	Very Shallow Dark Surfa	
	luck (A9) (LRR P, T)		Marl (F10)			_	Other (Explain in Remai	rks)
_ '	ed Below Dark Surface (A1	11)		, ,	(MLRA 151)			
_	Dark Surface (A12)				es (F12) (LRR	O, P, T)	³ Indicators of hydrophyti	•
Coasta	al Prairie Redox (A16) (ML	.RA 150A)			(LRR P, T, U)		wetland hydrology must	be present,
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (M I	LRA 151)		unless disturbed or prob	plematic
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18)	(MLRA 150A,	150B)		
Sandy	Redox (S5)		Piedmont F	loodplain S	oils (F19) (ML	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loar	my Soils (F20)	(MLRA 149A	A, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)						
Restrictive	Layer (if observed):							
Type:								
Depth (i	inches):					Hydric Soil	Is Present? YES	X No
	,				•	•		
Remarks:								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/5/2014 State: VA Applicant/Owner: VDOT Sampling Point: WL-67 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Local relief (concave, convex, none): Slope (%): 0-1% none 36° 45' 44.58" Subregion (LRR or MLRA): LRR T Lat: Long: 76° 15′ 56.47″ Datum: **WGS 84** Soil Map Unit Name: Udorthents-Urban land complex NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Yes X Is the Sampled Area No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PEM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the south of I-64 and does not have a tidal influence Adjacent to on ramp, maintained outside of forested area (approximatley 20 feet) **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: **0**" Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Water is at the soil surface

Project/Site:	I-64 /High Rise Brid	ge Corridor St	udy	
-	•			Sampling date: 2/5/2014
				Sampling point: WL-67
Vegetation (Four Strata) - Us	se scientific names of	plants.		
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1. Acer rubrum	15	Y	FAC	That are OBL, FACW, or FAC: 9 (A)
Red Maple				
2. Liquidambar styraciflua	15	Y	FAC	Total number of Dominant
Sweet-Gum				Species across All Strata: 9 (B)
3.	_			
	_			Percent of Dominant Species
4.		·		That are OBL, FACW, or FAC: 100% (A/B)
				(\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Total Cover: 30	50% of total cover	15%	-	
10101 001011	20% of total cover	6%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft)	2070 01 10101 00701	070		Total % Cover of Multiply by:
1. Acer rubrum			FAC	
Red Maple			170	
2. Morella cerifera		·	FAC	FACW species x 2 =
		·	FAC	FAC species x 3 =
Southern Bayberry				FACU species x 4 =
3. <u>Liquidambar styraciflua</u>	2	Y	FAC	UPL species x 5 =
Sweet-Gum				Column Totals:(A)(B)
4		. <u></u> .		Prevalence Index = B/A =
·				
5				
		. <u></u>		Hydrophytic Vegetation Indicators:
Total Cover: 9	50% of total cover	5%		1 - Rapid Test for Hydrophytic Vegetation
	20% of total cover	2%		x 2 - Dominance Test is >50%
Herb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1. Juncus effusus	30	Y	OBL	4 - Morphological Adaptations ¹ (Provide supporting data
Lamp Rush	_			and Remarks or on a separate sheet)
2. Phragmites australis		Y	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
Common Reed	_			
3.				
·				
4.				¹ Indicators of hydric soil and wetland hydrology must
4.				be present
5.		· <u></u>		Definitions of Four Vegetation Strata:
J		· 		Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
		· 		diameter at breast height (DBH), regardless of height.
6.				diameter at breast neight (DBH), regardless of neight.
T-4-1 O-11-11				Continu (Charle Mandy plants avaluating vince less than
Total Cover: 40	50% of total cover	20%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	8%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
Lonicera japonica	10	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
Japanese Honeysuckle				and woody plants less than 3.28 ft tall.
2. Toxicodendron radicans	5	Y	FAC	
Eastern Poison Ivy	<u> </u>	<u> </u>		Woody Vine - All woody vines greater than 3.28 ft in height.
3				
4	<u></u>	<u> </u>		Hydrophytic
	<u></u>	<u> </u>		Vegetation
Total Cover: 15	50% of total cover	8%		Present? Yes X No
	20% of total cover	3%		
Remarks: (Include photo num	bers here or on a sepa	rate sheet.)		11 1 /= 6 11 1
				Herb (5-ft radius)
		Trees and \	/in a a	
		(30-ft rad	ius)	
		Sapling/Shr	rub	
		(15-ft radiu		
		(13-it radit	13/	

 Sampling date:
 2/5/2014

 Sampling point:
 WL-67

Soil								
Profile Des	cription: (Describe to the	depth need	ed to document th	ne indicator	or confirm th	e absence of	f indicators.)	
Depth	Matrix			Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-3	10YR 4/1	100					sandy loam	
3-8	10YR 5/1	95	10YR 4/4	5			sandy loam	
8-10	10YR 5/1	90	10YR 4/6	10			sandy clay loam	
10-16+	10YR 4/1	95	10YR 4/4	5			sandy clay	
10-10-	1011(4/1	90	1011(4/4				Saridy Clay	
1T:: 0 0	tertion D. Douletion	DM Dadus	-I M-triv. MO. M				21 ti DI D Lin	in a DA Matrix
	oncentration, D=Depletion,		•		ams.		² Location: PL=Pore Lin	*·
1 -	Indicators: (Applicable t	o ali LRRS, i		•	(00) (1 DD (for Problematic Hydric So	
_	ol (A1)				e (S8) (LRR S		1cm Muck (A9) (LRR (•
	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10) (LRR	•
_	Histic (A3)			ky Mineral (F		_		(outside MLRA 150A,B)
Hydro	gen Sulfide (A4)		Loamy Gley	ed Matrix (F	2)	_	Piedmont Floodplain So	oils (F19) (LRR P, S, T)
Statifie	ed Layers (A5)		X Depleted M	atrix (F3)		_	Anomalous Bright Loan	ny Soils (F20)
Organ	ic Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6))		(MLRA 153B)	
5 cm N	Mucky Mineral (A7) (LRR P	P, T, U)	Depleted Da	ark Surface	(F7)	_	Red Parent Material (TI	F2)
Muck I	Presence (A8) (LRR U)		Redox Dep	ressions (F8)	_	Very Shallow Dark Surf	ace (TF12) (LRR T, U)
1cm M	luck (A9) (LRR P, T)		Marl (F10) (LRR U)		_	Other (Explain in Rema	ırks)
Deplet	ted Below Dark Surface (A1	11)	Depleted O	chric (F11) ((MLRA 151)			
Thick I	Dark Surface (A12)		Iron-Manga	nese Masses	s (F12) (LRR (O, P, T)	3Indicators of hydrophyt	ic vegetation and
Coasta	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Sur	face (F13) (I	LRR P, T, U)		wetland hydrology mus	t be present,
Sandy	Mucky Mineral (S1) (LRR,	, O, S)	Delta Ochri	c (F17) (ML	RA 151)		unless disturbed or pro	blematic
Sandy	Gleyed Matrix (S4)		Reduced Vo	ertic (F18) (I	MLRA 150A, 1	50B)		
Sandy	Redox (S5)		Piedmont F	loodplain So	ils (F19) (MLI	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)						
Restrictive	Layer (if observed):							
Type:								
Depth (i	inches):					Hydric Soils	s Present? YES	X No
(.						,		<u>~</u>
Remarks:					ı			

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/5/2014 State: VA Applicant/Owner: VDOT Sampling Point: WL-68, 69 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Local relief (concave, convex, none): Slope (%): 0-1% none Subregion (LRR or MLRA): LRR T 36° 45' 46.57" Lat: Long: 76° 15′ 51.73″ Datum: **WGS 84** Soil Map Unit Name: Tomotley-Urban land-Nimmo complex NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation __ ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PEM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the south of I-64 and does not have a tidal influence Maintained field HYDROLOGY Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: 3" Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

Project/S	ite:	I-64 /High Rise Bridg	ge Corridor St	udy	
,				•	Sampling date: 2/5/2014
					Sampling point: WL-68, 69
Vegetation (F	-our Strata)	Use scientific names of			
- 0	(DI	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	(Plot sizes:	ft) % Cover	Species?	Status	Number of Dominant species That are ORL FACW or FAC:
1			-		That are OBL, FACW, or FAC: 1 (A)
2.					Total number of Dominant
Z					Species across All Strata: 1 (B)
3.					Operior delegation with cutata.
<u> </u>					Percent of Dominant Species
4.		<u> </u>			That are OBL, FACW, or FAC: 100% (A/B)
Total Cov	ver: 0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
Sapling /Shru	b Stratum (ft)				Total % Cover of Multiply by:
1.					OBL species x 1 =
					FACW species x 2 =
2					FAC species x 3 =
		<u> </u>			FACU species x 4 =
3					UPL species x 5 =
. ——					Column Totals:(A)(B)
4					Prevalence Index = B/A =
5					Hydrophytic Vegetation Indicators:
Total Cov	ver: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
Total Cov	rei. U	20% of total cover	0%		x 2 - Dominance Test is >50%
Herb Stratum	Λ	20% of total cover	076		3 - Prevalence Index is ≤3.0 ¹
1. Panicum		75	Y	FAC	4 - Morphological Adaptations¹ (Provide supporting data
i. <u>Pariicurii</u>	<i>δ</i> ρρ.			FAC	and Remarks or on a separate sheet)
2. Juncus e	ffucue			OBL	Problematic Hydrophytic Vegetation¹ (Explain)
Lamp Ru				OBL	1 Tobicinatio Hydrophytic Vegetation (Explain)
3. Ludwigia			N	OBL	
o. <u></u>	<u> </u>				
4.					¹ Indicators of hydric soil and wetland hydrology must
					be present
5.					Definitions of Four Vegetation Strata:
					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
Total Cov	ver: 95	50% of total cover	48%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	19%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine S	Stratum ()				
1					Herb - All herbaceous (non-woody) plants, regardless of size,
					and woody plants less than 3.28 ft tall.
2					Weedy Vine All woody vines greater than 2.29 ft in height
3.					Woody Vine - All woody vines greater than 3.28 ft in height.
J					
4.					Hydrophytic
т					Vegetation
Total Cov	/er: 0	50% of total cover	0%		Present? Yes X No
		20% of total cover	0%		
Remarks: (In	clude photo n	umbers here or on a separ			
		served to id species	,		Herb (5-ft radius)
01		,			
			Trees and V	/inos	
			(30-ft radi		
			(30-111401	iusj	
		Г			
			Sapling/Shr	ub	
			(15-ft radiu	ıs)	
		L			

D:	LO4 / Link Din - Dai	l
rolect/Site:	I-64 /High Rise Brid	iae Corridor Study

Sampling date: 2/5/2014
Sampling point: WL-68, 69

	cription: (Describe to the	depth need	ed to document th			he absence of	of indicators.)	
Depth	Matrix			Redox Fe				
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-3	10YR 5/1	100					sandy loam	many roots
3-8	10YR 5/1	90	10YR 4/6	10			sandy clay loam	
8-14	10YR 6/1	95	10YR 5/4	5			sandy clay loam	
14-16+	10YR 6/1	80	10YR 4/6	20			sandy clay loam	
¹Type: C=C	oncentration, D=Depletion,	RM=Reduce	ed Matrix, MS=Mas	ked Sand G	rains.		² Location: PL=Pore	Lining, M=Matrix.
Hydric Soil	Indicators: (Applicable t	to all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydric	: Soils³:
Histos	ol (A1)		Polyvalue B	selow Surfac	e (S8) (LRR	S, T, U)	1cm Muck (A9) (LR	R O)
Histic	Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U)) <u> </u>	2cm Muck (A10) (L	•
	Histic (A3)			, ,	F1) (LRR O)	<i>'</i>		3) (outside MLRA 150A,B)
	gen Sulfide (A4)		Loamy Gley			_		n Soils (F19) (LRR P, S, T)
_ ' '	ed Layers (A5)				۷)	_		. ,
	,	118		, ,	• • •	_	Anomalous Bright L	Dailiy Solis (F20)
_	ic Bodies (A6) (LRR P, T,	-	Redox Dark		-		(MLRA 153B)	(TEO)
	Mucky Mineral (A7) (LRR F	, I, U)	Depleted Da			_	Red Parent Material	,
	Presence (A8) (LRR U)		Redox Dep	,	3)	_		Surface (TF12) (LRR T, U)
	luck (A9) (LRR P, T)		Marl (F10) (_	Other (Explain in Re	marks)
	ted Below Dark Surface (A	11)		` '	(MLRA 151)			
Thick I	Dark Surface (A12)				es (F12) (LRR		3Indicators of hydrop	hytic vegetation and
Coasta	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Sur	face (F13)	(LRR P, T, U)		wetland hydrology m	nust be present,
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (ML	.RA 151)		unless disturbed or p	problematic
Sandy	Gleyed Matrix (S4)		Reduced V	ertic (F18) (MLRA 150A,	150B)		
Sandy	Redox (S5)		Piedmont F	loodplain So	oils (F19) (ML	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loan	ny Soils (F20)	(MLRA 149A	A, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)						
Restrictive	Layer (if observed):							
Type:								
Depth (i	inches):					Hydric Soi	Is Present? YE	S X No
Bopui (i	monooj.					,	12	<u> </u>
Remarks: si	oils are compacted. Potent	tially fill mate	rial					
rtomanto. o	ono aro compactoa. I otori	tidily illi illato	TIG.					
								<u> </u>

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 2/5/2014 State: VA Applicant/Owner: VDOT Sampling Point: WL-70 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): tidal floodplain Local relief (concave, convex, none): Slope (%): 0-1% none 36° 45' 36.79" Subregion (LRR or MLRA): LRR T Lat: Long: 76° 16' 03.36" Datum: **WGS 84** Soil Map Unit Name: Udorthents-Urban land complex NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Yes X Is the Sampled Area No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PEM Wetland (isolated wetland) Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the north of I-64 and does not have a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: **0**" Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Water is at soil surface

	Project/Site:	I-64 /High Rise Bridg	ge Corridor St	udy	
			3	<u>,</u>	Sampling date: 2/5/2014
					Sampling point: WL-70
<u>Ve</u>	getation (Four Strata) - Use				
		Absolute	Dominant	Indicator	Dominance Test worksheet:
	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.			. <u> </u>		That are OBL, FACW, or FAC: 2 (A)
					.
2.		<u> </u>	<u> </u>		Total number of Dominant
		<u> </u>	<u> </u>		Species across All Strata: (B)
3.		_ ·			. 📗
		<u> </u>			Percent of Dominant Species
4.					That are OBL, FACW, or FAC: 100% (A/B)
			<u></u>	·	.
	Total Cover: 0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1.		_ ·			OBL speciesx 1 =
		<u> </u>			FACW species x 2 =
2.					FAC species x 3 =
	-				FACU species x 4 =
3.	-				UPL species x 5 =
٥.					Column Totals: (A) (B)
4.					Prevalence Index = B/A =
4.					Prevalence index = D/A =
5					
5					Hudrankytia Vagatatian Indicators
	T-1-1 0-11-2		00/		Hydrophytic Vegetation Indicators:
	Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	0%		x 2 - Dominance Test is >50%
	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Cyperus filiculmis	70	Y	OBL	4 - Morphological Adaptations ¹ (Provide supporting data
	Fern Flat Sedge				and Remarks or on a separate sheet)
2.	Cinna arundinacea	20	N	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
	Sweet Wood-Reed				
3.	Aster spp.		N	FAC	
С.	Maidenhair Spleenwort				
4	Juncus effusus		N	OBL	¹ Indicators of hydric soil and wetland hydrology must
٦.	Lamp Rush	<u> </u>			be present
5.	Cyperus esculentus		N	FAC	Definitions of Four Vegetation Strata:
5.	Chufa			IAC	Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
_				- FACII	
6.	0	2	N	FACU	diameter at breast height (DBH), regardless of height.
_	English Plantain				
7					
	·				
	Total Cover: 117	50% of total cover	59%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	23%		3in. DBH and greater than 3.28 ft (1m) tall.
Wo	oody Vine Stratum ()		. <u> </u>	·	.
1.	Lonicera japonica	2	Y	FAC	Herb - All herbaceous (non-woody) plants, regardless of size,
	Japanese Honeysuckle	<u> </u>			and woody plants less than 3.28 ft tall.
2.					
					Woody Vine - All woody vines greater than 3.28 ft in height.
3.					J
•	-				
4.					Hydrophytic
٦.					Vegetation
	Total Cover: 2	50% of total cover	1%		' l
	Total Cover.				Present? Yes X No
ח		20% of total cover	0%		
Ke	marks: (Include photo numb	pers nere or on a separ	ate sneet.)		Herb (5-ft radius)
					\longrightarrow $/$
			Trees and V	lines	
				, in es	
		,			
			Sapling/Shr	mh	
			(15-ft radiu		
			(13)(100)	13)	

Proiect/Site:	L64 /High	Dico Bridge	Corridor	Study
Project/Site:	1-64 /mian	Rise bridge	Comaon	Sluav

Sampling date: 2/5/2014
Sampling point: WL-70

-6 1 -14 1 Type: C=Conline Histosol Histic Ep Black His Hydroger Statified Organic I 5 cm Muc Muck Pre 1 cm Muc Depleted	ipedon (A2)	o all LRRs, ι U) ', Τ, U)	Polyvalue E Polyvalue E Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark	noted.) Below Surface (S Surface (S9) (LR Sky Mineral (F1) (yed Matrix (F2) latrix (F3) c Surface(F6) ark Surface (F7)	68) (LRR S RR S, T, U) (LRR O)	s, T, U) _	Texture silt loam sandy clay loam sandy clay loam sandy clay loam sandy clay 2Location: PL=Pore Lining s for Problematic Hydric Soil 1cm Muck (A9) (LRR O) 2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy (MLRA 153B)	s ³ :) utside MLRA 150A,B) s (F19) (LRR P, S, T)
-6 1 -14 1 Type: C=Conline Histosol Histic Ep Black His Hydroger Statified Organic I 5 cm Muc Muck Pre 1 cm Muc Depleted	toyR 5/1 toyR 5/1 toyR 5/1 toyR 5/1 toyR 6/1 toy	80 RM=Reduce o all LRRs, u	10YR 5/4 10YR 6/3 10YR 5/4 d Matrix, MS=Mas Inless otherwise Polyvalue E Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	10 10 20 ked Sand Grains noted.) Below Surface (S Surface (S9) (LF cky Mineral (F1) (yed Matrix (F2) latrix (F3) c Surface(F6) ark Surface (F7)	68) (LRR S RR S, T, U) (LRR O)	s, T, U) _	sandy clay loam sandy clay loam sandy clay loam sandy clay 2Location: PL=Pore Lining s for Problematic Hydric Soil 1cm Muck (A9) (LRR O) 2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy	s ³ :) utside MLRA 150A,B) s (F19) (LRR P, S, T)
Type: C=Conclete C=Con	noyr 5/1 noyr 6/1 noyr 6	80 RM=Reduce o all LRRs, u	10YR 5/4 10YR 6/3 10YR 5/4 d Matrix, MS=Mas Inless otherwise Polyvalue E Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	10 10 20 ked Sand Grains noted.) Below Surface (S Surface (S9) (LF cky Mineral (F1) (yed Matrix (F2) latrix (F3) c Surface(F6) ark Surface (F7)	68) (LRR S RR S, T, U) (LRR O)	s, T, U) _	sandy clay loam sandy clay loam sandy clay 2Location: PL=Pore Lining s for Problematic Hydric Soil 1cm Muck (A9) (LRR O) 2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy	s ³ :) utside MLRA 150A,B) s (F19) (LRR P, S, T)
4+ 1 Type: C=Cond Iydric Soil In Histosol Histic Ep Black His Hydroger Statified Organic I 5 cm Muc Muck Pre 1cm Muc Depleted	centration, D=Depletion, dicators: (Applicable to (A1) ipedon (A2) stic (A3) in Sulfide (A4) Layers (A5) Bodies (A6) (LRR P, T, U cky Mineral (A7) (LRR P esence (A8) (LRR U) ick (A9) (LRR P, T) I Below Dark Surface (A1	RM=Reduce o all LRRs, u	10YR 6/3 10YR 5/4 d Matrix, MS=Mass Inless otherwise Polyvalue E Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	sked Sand Grains noted.) Below Surface (S Surface (S9) (LF cky Mineral (F1) (yed Matrix (F2) latrix (F3) c Surface(F6) ark Surface (F7)	68) (LRR S RR S, T, U) (LRR O)	s, T, U) _	sandy clay loam sandy clay 2Location: PL=Pore Lining s for Problematic Hydric Soil 1cm Muck (A9) (LRR O) 2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy	s ³ :) utside MLRA 150A,B) s (F19) (LRR P, S, T)
Type: C=Conding tydric Soil In Histosol Histic Ep Black His Hydroger Statified Organic I 5 cm Muck President Communication of the History Huck President Communication of the History Huck President Communication of the History Hist	centration, D=Depletion, dicators: (Applicable to (A1) ipedon (A2) stic (A3) in Sulfide (A4) Layers (A5) Bodies (A6) (LRR P, T, U cky Mineral (A7) (LRR P esence (A8) (LRR U) ck (A9) (LRR P, T) I Below Dark Surface (A1)	RM=Reduce o all LRRs, u U) V, T, U)	d Matrix, MS=Massinless otherwise Polyvalue E Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	ked Sand Grains noted.) Below Surface (S Surface (S9) (LF cky Mineral (F1) (yed Matrix (F2) latrix (F3) c Surface(F6) ark Surface (F7)	68) (LRR S RR S, T, U) (LRR O)	s, T, U) _	sandy clay *Location: PL=Pore Lining s for Problematic Hydric Soil 1cm Muck (A9) (LRR O) 2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy	s ³ :) utside MLRA 150A,B) s (F19) (LRR P, S, T)
Type: C=Conding tydric Soil In Histosol Histic Ep Black His Hydroger Statified Organic I 5 cm Muck President Communication of the History Huck President Communication of the History Huck President Communication of the History Hist	centration, D=Depletion, dicators: (Applicable to (A1) ipedon (A2) stic (A3) in Sulfide (A4) Layers (A5) Bodies (A6) (LRR P, T, U cky Mineral (A7) (LRR P esence (A8) (LRR U) ck (A9) (LRR P, T) I Below Dark Surface (A1)	RM=Reduce o all LRRs, u U) V, T, U)	d Matrix, MS=Massinless otherwise Polyvalue E Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	ked Sand Grains noted.) Below Surface (S Surface (S9) (LR cky Mineral (F1) (yed Matrix (F2) latrix (F3) c Surface(F6) ark Surface (F7)	68) (LRR S RR S, T, U) (LRR O)	s, T, U) _	² Location: PL=Pore Lining s for Problematic Hydric Soil 1cm Muck (A9) (LRR O) 2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy	s ³ :) utside MLRA 150A,B) s (F19) (LRR P, S, T)
lydric Soil In Histosol I Histic Ep Black His Hydroger Statified Organic I 5 cm Muc Muck Pre 1cm Muc Depleted	dicators: (Applicable to (A1) ipedon (A2) stic (A3) n Sulfide (A4) Layers (A5) Bodies (A6) (LRR P, T, Ucky Mineral (A7) (LRR Pesence (A8) (LRR U) ck (A9) (LRR P, T)	o all LRRs, ι U) ', Τ, U)	Polyvalue E Polyvalue E Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	noted.) Below Surface (S Surface (S9) (LR Sky Mineral (F1) (yed Matrix (F2) latrix (F3) c Surface(F6) ark Surface (F7)	68) (LRR S RR S, T, U) (LRR O)	s, T, U) _	s for Problematic Hydric Soil 1cm Muck (A9) (LRR O) 2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy	s ³ :) utside MLRA 150A,B) s (F19) (LRR P, S, T)
lydric Soil In Histosol I Histic Ep Black His Hydroger Statified Organic I 5 cm Muc Muck Pre 1cm Muc Depleted	dicators: (Applicable to (A1) ipedon (A2) stic (A3) n Sulfide (A4) Layers (A5) Bodies (A6) (LRR P, T, Ucky Mineral (A7) (LRR Pesence (A8) (LRR U) ck (A9) (LRR P, T)	o all LRRs, ι U) ', Τ, U)	Polyvalue E Polyvalue E Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	noted.) Below Surface (S Surface (S9) (LR Sky Mineral (F1) (yed Matrix (F2) latrix (F3) c Surface(F6) ark Surface (F7)	68) (LRR S RR S, T, U) (LRR O)	s, T, U) _	s for Problematic Hydric Soil 1cm Muck (A9) (LRR O) 2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy	s ³ :) utside MLRA 150A,B) s (F19) (LRR P, S, T)
lydric Soil In Histosol I Histic Ep Black His Hydroger Statified Organic I 5 cm Muc Muck Pre 1cm Muc Depleted	dicators: (Applicable to (A1) ipedon (A2) stic (A3) n Sulfide (A4) Layers (A5) Bodies (A6) (LRR P, T, Ucky Mineral (A7) (LRR Pesence (A8) (LRR U) ck (A9) (LRR P, T)	o all LRRs, ι U) ', Τ, U)	Polyvalue E Polyvalue E Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	noted.) Below Surface (S Surface (S9) (LR Sky Mineral (F1) (yed Matrix (F2) latrix (F3) c Surface(F6) ark Surface (F7)	68) (LRR S RR S, T, U) (LRR O)	s, T, U) _	s for Problematic Hydric Soil 1cm Muck (A9) (LRR O) 2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy	s ³ :) utside MLRA 150A,B) s (F19) (LRR P, S, T)
Histosol Histic Ep Black His Hydroger Statified Organic I 5 cm Muc Muck Pre 1cm Muc Depleted	(A1) ipedon (A2) stic (A3) n Sulfide (A4) Layers (A5) Bodies (A6) (LRR P, T, U) cky Mineral (A7) (LRR P) esence (A8) (LRR U) ck (A9) (LRR P, T) I Below Dark Surface (A1)	U) γ, τ, U)	Polyvalue E Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	Selow Surface (S Surface (S9) (LR Sky Mineral (F1) (yed Matrix (F2) latrix (F3) < Surface(F6) ark Surface (F7)	RR S, T, U) (LRR O)	s, T, U) _	1cm Muck (A9) (LRR O) 2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy) utside MLRA 150A,B) s (F19) (LRR P, S, T)
Histic Ep Black His Hydroger Statified Organic I 5 cm Muc Muck Pre 1cm Muc Depleted	ipedon (A2) stic (A3) n Sulfide (A4) Layers (A5) Bodies (A6) (LRR P, T, U) cky Mineral (A7) (LRR P) esence (A8) (LRR U) ck (A9) (LRR P, T) I Below Dark Surface (A1)	P, T, U)	Thin Dark S Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	Surface (S9) (LR cky Mineral (F1) (yed Matrix (F2) latrix (F3) < Surface(F6) ark Surface (F7)	RR S, T, U) (LRR O)	-	2cm Muck (A10) (LRR S Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy) utside MLRA 150A,B) s (F19) (LRR P, S, T)
Black His Hydroger Statified Organic I 5 cm Muc Muck Pre 1 cm Muc Depleted	stic (A3) n Sulfide (A4) Layers (A5) Bodies (A6) (LRR P, T, Ucky Mineral (A7) (LRR Pesence (A8) (LRR U) ck (A9) (LRR P, T) Below Dark Surface (A1)	P, T, U)	Loamy Muc Loamy Gley X Depleted M Redox Dark Depleted D Redox Dep	cky Mineral (F1) (yed Matrix (F2) latrix (F3) x Surface(F6) ark Surface (F7)	(LRR O)	- - - -	Reduced Vertic (F18) (ou Piedmont Floodplain Soils Anomalous Bright Loamy	utside MLRA 150A,B) s (F19) (LRR P, S, T)
Hydroger Statified Organic I 5 cm Muc Muck Pre 1cm Muc	n Sulfide (A4) Layers (A5) Bodies (A6) (LRR P, T, Ucky Mineral (A7) (LRR Pesence (A8) (LRR U) k (A9) (LRR P, T) I Below Dark Surface (A1)	P, T, U)	Loamy Glee X Depleted M Redox Dark Depleted D Redox Dep	yed Matrix (F2) latrix (F3) < Surface(F6) ark Surface (F7)		- - -	Piedmont Floodplain Soils Anomalous Bright Loamy	s (F19) (LRR P, S, T)
Statified Organic I 5 cm Muc Muck Pre 1 cm Muc Depleted	Layers (A5) Bodies (A6) (LRR P, T, U) cky Mineral (A7) (LRR P) esence (A8) (LRR U) ck (A9) (LRR P, T) I Below Dark Surface (A1)	P, T, U)	X Depleted M Redox Dark Depleted D Redox Dep	latrix (F3) Surface(F6) ark Surface (F7)	1	<u>-</u>	Anomalous Bright Loamy	. ,
Organic I 5 cm Muck Pre 1 cm Muc Depleted	Bodies (A6) (LRR P, T, Ucky Mineral (A7) (LRR Pesence (A8) (LRR U)ck (A9) (LRR P, T)	P, T, U)	Redox Dark Depleted D Redox Dep	k Surface(F6) ark Surface (F7)	i	_		JUIIS (FZU)
5 cm Muck Pre 1cm Muck Depleted	cky Mineral (A7) (LRR Pesence (A8) (LRR U) ck (A9) (LRR P, T) l Below Dark Surface (A1	P, T, U)	Depleted D Redox Dep	ark Surface (F7)	١		(INITUM 199D)	
Muck Pre 1cm Muc Depleted	esence (A8) (LRR U) ck (A9) (LRR P, T) I Below Dark Surface (A1		Redox Dep	` ,			Red Parent Material (TF2)
1cm Muc Depleted	ck (A9) (LRR P, T) I Below Dark Surface (A1	11)				_	Very Shallow Dark Surface	*
Depleted	Below Dark Surface (A1	11)		` '		_	Other (Explain in Remark	
	,			chric (F11) (ML	D A 151\	_	Other (Explain in Kemark	.5)
ITIICK Da		,		inese Masses (F	,) P T)	3Indicators of hydrophytic	vegetation and
Coastal	Prairie Redox (A16) (ML I	PA 150A)		face (F13) (LRF		, , , , ,	wetland hydrology must b	=
_	ucky Mineral (S1) (LRR,	•		c (F17) (MLRA			unless disturbed or proble	• •
	leyed Matrix (S4)	, 0, 3)		ertic (F18) (MLF	-	50B)	unless disturbed of proble	emano
	edox (S5)			loodplain Soils (•	•		
	Matrix (S6)			Bright Loamy S	· , •	•	A 153C 153D)	
	face (S7) (LRR P, S, T,	U)	7 11011141040	Diigin Loamy O	0.10 (1 20)	(11121111111111111111111111111111111111	, 1, 1000, 100D,	
	ayer (if observed):	-,						
Type:	., (0.000.100.).							
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
Depth (inc	:hes):					Hvdric Soi	ils Present? YES X	(No
(<u>-</u>	<u> </u>
Remarks:								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 4/21/2014 State: VA Sampling Point: WL-71 Applicant/Owner: VDOT Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): Slope (%): 0-1% none 36° 47' 06.00" Subregion (LRR or MLRA): LRR T Lat: ___ Long: <u>76° 24' 39.75"</u> Datum: **WGS 84** Soil Map Unit Name: Udorthents-Urban land complex NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation __ ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PEM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the south of I-664 and does not have a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: 3" Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Surface water is found in some areas within the wetland boudary

	Project/Site:	I-64 /High Rise Bride	ge Corridor Stu	udy	
		- · <u>u</u>	3-	,	
					Sampling point: WL-71
Ve	getation (Four Strata) - Us	e scientific names of	plants.		
		Absolute	Dominant	Indicator	Dominance Test worksheet:
	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.		_			That are OBL, FACW, or FAC: 2 (A)
_					
2.			-		Total number of Dominant
_					Species across All Strata: 2 (B)
3.					
4					Percent of Dominant Species
4.					That are OBL, FACW, or FAC: 100% (A/B)
	Total Cover: 0	50% of total cover	0%		
	Total Cover.	20% of total cover	0%		Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)	20 /0 OI total cover	0 70		Total % Cover of Multiply by:
1.	Pinig/Ornab Ottatam (It)	_			OBL species x 1 =
••	-				FACW species x 2 =
2.	-	_			FAC species
		<u> </u>		-	FACU species x 4 =
3.					UPL species x 5 =
		_		-	Column Totals: (A) (B)
4.					Prevalence Index = B/A =
		<u> </u>			
5					
					Hydrophytic Vegetation Indicators:
	Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	0%		x 2 - Dominance Test is >50%
	r <u>b Stratum ()</u>				3 - Prevalence Index is ≤3.0 ¹
1.		60	<u> </u>	OBL	4 - Morphological Adaptations¹ (Provide supporting data
_	Broad-Leaf Cat-Tail				and Remarks or on a separate sheet)
2.		40	Y	OBL	Problematic Hydrophytic Vegetation¹ (Explain)
2	Lamp Rush		N	FACW	
3.	Carex spp.		IN	FACW	
4.	sedge		-		¹ Indicators of hydric soil and wetland hydrology must
٠.	-	_			be present
5.		<u> </u>			Definitions of Four Vegetation Strata:
	-				Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
7		<u> </u>			
	Total Cover: 120	50% of total cover	60%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	24%		3in. DBH and greater than 3.28 ft (1m) tall.
	oody Vine Stratum ()				
1.					Herb - All herbaceous (non-woody) plants, regardless of size,
_					and woody plants less than 3.28 ft tall.
2.	-				Woody Vine All woody vines greater than 2.29 ft in height
3.		_			Woody Vine - All woody vines greater than 3.28 ft in height.
J.					
4.					Hydrophytic
٦.					Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
	10.0.100101.	20% of total cover	0%		100 <u>X</u> 100
Re	marks: (Include photo num				
	()		,		Herb (5-ft radius)
			Trees and \	linos	
			irees and v	/IIIes	
		Г			
			Sapling/Shr	ub	
			(15-ft radiu	ıs)	

Project/Site	I-64 /High	Rica Bridge	Corridor Study
FIUIECI/SILE.	1-04 /I IIQII I	Mise blidge	Cornadi Stady

Sampling date: 4/21/2014
Sampling point: WL-71

SOII Profile Des	cription: (Describe to the	denth need	led to document th	e indicator	or confirm th	e absence o	of indicators)		
Depth	Matrix	deptii need	ieu to document ti	Redox Fea		ie absence (or mulcators.		
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-3	10YR 3/1	100	Color (molot)		Турс		silt loam	many roots	
3-8	10YR 5/1	90					sandy clay loam	some roots	
0 0	10YR 4/2	10					sandy clay loam	come roots	
8-12+	10YR 4/1	49	10YR 5/6	2			sandy clay loam	-	
0 121	10YR 5/2	49	10111 0/0				dandy didy rodin	-	
	101110/2							-	
								-	
¹Type: C=C	oncentration, D=Depletion,	RM=Reduc	ed Matrix MS=Mas	ked Sand Gr	ains		² Location: PL=Pore	Lining M=Matrix	
	Indicators: (Applicable t		•		anio.	Indicators	for Problematic Hydri	<u>.</u>	
-	ol (A1)	o an Enns,		•	e (S8) (LRR \$		1cm Muck (A9) (LF		
_	Epipedon (A2)				(LRR S, T, U	_	2cm Muck (A10) (L	•	
_	Histic (A3)			ky Mineral (F	-	′ –		8) (outside MLRA 150A,B)	
_	gen Sulfide (A4)			ed Matrix (F		_		n Soils (F19) (LRR P, S, T)	
	ed Layers (A5)		- 		2)	_			
_	ic Bodies (A6) (LRR P, T,	111		. ,	\	_	Anomalous Bright L	Loanly Solis (F20)	
	Mucky Mineral (A7) (LRR P , 1, 1	•		Surface(F6) ark Surface ((MLRA 153B)	I (TE2)	
	Presence (A8) (LRR U)	', 1, 0)			,	_	Red Parent Material (TF2)		
	. , . ,		Marl (F10) (ressions (F8)	_		Shallow Dark Surface (TF12) (LRR T, U)	
_	Muck (A9) (LRR P, T)	14)			MI DA 454)	-	Other (Explain in Re	emarks)	
	ted Below Dark Surface (A1 Dark Surface (A12)	11)		. , ,	MLRA 151) s (F12) (LRR (O D T\	3Indicators of hydro	phytic vogotation and	
_	al Prairie Redox (A16) (ML	DA 150A\			LRR P, T, U)	O, F, 1)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present.		
	, , ,	•		c (F17) (ML			unless disturbed or	' '	
	Mucky Mineral (S1) (LRR,	, 0, 3)			· -	IEOD\	uniess disturbed of	problematic	
	Gleyed Matrix (S4)				MLRA 150A, 1	-			
	Redox (S5)			•	ils (F19) (ML	•	A 452C 452D)		
	ed Matrix (S6)		Anomaious	Bright Loam	y Solis (F20)	(WLKA 149	A, 153C, 153D)		
	Surface (S7) (LRR P, S, T,	U)							
_	Layer (if observed):								
Type:									
D 11 /							1. D	-0 V N	
Depth (inches):					Hydric Soi	Is Present? YE	ES <u>X</u> No	
D	Name =	!-1							
Remarks: C	Compacted potential fill mate	eriai							
ł									

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 4/21/2014 State: VA Sampling Point: WL-72 Applicant/Owner: VDOT Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): drainageway Local relief (concave, convex, none): Slope (%): 0-1% none 36° 46' 28.03" Subregion (LRR or MLRA): LRR T Lat: Long: <u>76° 21' 34.75"</u> Datum: **WGS 84** Soil Map Unit Name: Tomotley-Deloss complex NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation __ ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PEM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the north of Cavalier Blvd. and does not have a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: 3" Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Surface water is found within the wetland boudary

	Project/Site:	I-64 /High Rise Bridg	ge Corridor Stu	udy	
			9	,	Sampling date: 4/21/2014
					Sampling point: WL-72
۷e	getation (Four Strata) - Use	scientific names of	plants.		
	-	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	,				That are OBL, FACW, or FAC: 4 (A)
2.					Total number of Dominant
					Species across All Strata: 4 (B)
3.		- —			(,
					Percent of Dominant Species
4.					That are OBL, FACW, or FAC: 100% (A/B)
					(\
	Total Cover: 0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)		- 7.5		Total % Cover of Multiply by:
	Morella cerifera	2	Y	FAC	OBL species x 1 =
•	Southern Bayberry				FACW species x 2 =
2.	Acer rubrum		Y	FAC	FAC species x 3 =
	Red maple		<u>-</u>		FACU species x 4 =
3.	Clethra alnifolia	2	Y	FACW	UPL species x 5 =
٥.	Coastal Sweet-Pepperbush			17.011	Column Totals: (A) (B)
4.	Codotal Circuit i opportuent				Prevalence Index = B/A =
→.					Trevalence index = D/A =
5					
J					Hydrophytic Vegetation Indicators:
	Total Cover: 6	50% of total cover	3%		1 - Rapid Test for Hydrophytic Vegetation
	Total Cover.	20% of total cover	3% 1%		x 2 - Dominance Test is >50%
		20% of total cover	1%		
	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Arundinaria gigantea	40	<u> </u>	FACW	4 - Morphological Adaptations ¹ (Provide supporting data
	Giant Cane				and Remarks or on a separate sheet)
2.	Woodwardia areolata	10	N	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
	Netted Chain Fern				
3.	Saururus cernuus	10	N	OBL	
	Lizard's-Tail				
4.					¹ Indicators of hydric soil and wetland hydrology must
					be present
5.					Definitions of Four Vegetation Strata:
					Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.					diameter at breast height (DBH), regardless of height.
					,, .g.,
7					
	Total Cover: 60	50% of total cover	30%		Sapling /Shrub - Woody plants, excluding vines, less than
	Total Cover.	20% of total cover	12%		3in. DBH and greater than 3.28 ft (1m) tall.
۱۸۱	oody Vine Stratum ()	20 % of total cover	12 /0		Sin. DBH and greater than 3.20 ft (1111) tall.
	-				Herb - All herbaceous (non-woody) plants, regardless of size,
1.					and woody plants less than 3.28 ft tall.
2	-				and woody plants less than 3.20 it tall.
2.					Was do Visa. All considers and the COO ft in height
_					Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
4.					Hydrophytic
		_			Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
		20% of total cover	0%		
Re	marks: (Include photo numbe	ers here or on a separ	ate sheet.)		11 1 /F (t. 1;)
					Herb (5-ft radius)
			T	<i>c</i>	
			Trees and \	/ines	
		L			
			Sapling/Shr	ub _	
			(15-ft radiu	15)	
				_	

Project/	Sito: 1-64 /L	High Rise Bride	ae Corridor	Study
-101601/	Sile. 1-04/F	TIGHT KISE DHU	de Comidoi	Siduy

Sampling date: 4/21/2014
Sampling point: WL-72

- # -								
	cription: (Describe to the	aeptn need	ea to aocument tr			ne absence o	of indicators.)	
Depth	Matrix			Redox Fe	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-5	10YR 2/1	100					silt loam	saturated
5-15+	10YR 5/1	100					sand	
¹Type: C=Ce	oncentration, D=Depletion,	RM=Reduce	ed Matrix, MS=Masl	ked Sand G	rains.		² Location: PL=Pore	Lining, M=Matrix.
Hydric Soil	Indicators: (Applicable t	o all LRRs,	unless otherwise	noted.)		Indicators	for Problematic Hydri	c Soils³:
Histos	ol (A1)		Polyvalue B	elow Surfac	e (S8) (LRR	S, T, U)	1cm Muck (A9) (LI	RR O)
	Epipedon (A2)				(LRR S, T, U		2cm Muck (A10) (I	·
	Histic (A3)				F1) (LRR O)	_		8) (outside MLRA 150A,B)
	gen Sulfide (A4)		Loamy Gley			_		n Soils (F19) (LRR P, S, T)
<u> </u>	ed Layers (A5)		X Depleted M		2)	_	Anomalous Bright I	
	ic Bodies (A6) (LRR P, T,	11/	Redox Dark	, ,	1	_	(MLRA 153B)	coarry Solis (1 20)
_		-	Depleted Da				Red Parent Materia	J (TE2)
_	Mucky Mineral (A7) (LRR F	-, 1, 0)			. ,	-		,
	Presence (A8) (LRR U)		Redox Depi	,)	_		Surface (TF12) (LRR T, U)
	luck (A9) (LRR P, T)	4.4\	Marl (F10) (-	(A.I. D. A. 454)	_	Other (Explain in R	emarks)
	red Below Dark Surface (A	11)		, ,	(MLRA 151)		31 11 4 61 1	
	Dark Surface (A12)				s (F12) (LRR	· · · · ·	=	phytic vegetation and
	al Prairie Redox (A16) (ML	•			LRR P, T, U)		wetland hydrology i	•
	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri				unless disturbed or	problematic
	Gleyed Matrix (S4)				MLRA 150A,	-		
Sandy	Redox (S5)		Piedmont F	loodplain So	oils (F19) (ML	RA 149A)		
Strippe	ed Matrix (S6)		Anomalous	Bright Loan	ny Soils (F20)	(MLRA 149	A, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)						
Restrictive	Layer (if observed):							
Type:								
Depth (i	inches):					Hydric Soi	Is Present? YI	ES <u>X</u> No
Remarks:								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 4/21/2014 State: VA Sampling Point: WL-73 Applicant/Owner: VDOT Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): Slope (%): 0-1% none 36° 46' 10.44" Subregion (LRR or MLRA): LRR T Lat: Long: 76° 21' 39.40" Datum: **WGS 84** Soil Map Unit Name: Tomotley-Deloss complex NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation __ ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Yes X Is the Sampled Area No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PEM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the east of I-64 off ramp and does not have a tidal influence Within a utility easement **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) X Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0' Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

	Project/Site:	I-64 /High Rise Bridg	ge Corridor Stu	udy	
	, <u> </u>	V	y -	· · · ·	Sampling date: 4/21/2014
		_			Sampling point: WL-73
Ve	getation (Four Strata) - Use				T
_	0 (D	Absolute	Dominant	Indicator	Dominance Test worksheet:
	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	-				That are OBL, FACW, or FAC: (A)
2.					Total number of Dominant
۷.					Species across All Strata: 2 (B)
3.					Opecies across Air Strata.
Ο.					Percent of Dominant Species
4.					That are OBL, FACW, or FAC: 100% (A/B)
••					111at all 0 0 5 2, 1 7 to 17 to 1 1 7 to 1
	Total Cover: 0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)		- 7.5		Total % Cover of Multiply by:
1.					OBL species x 1 =
		_			FACW species x 2 =
2.	-				FAC species x 3 =
		_			FACU species x 4 =
3.					UPL species x 5 =
					Column Totals: (A) (B)
4.					Prevalence Index = B/A =
5					
					Hydrophytic Vegetation Indicators:
	Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	0%		x 2 - Dominance Test is >50%
Не	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Phragmites australis	30	Y	FACW	4 - Morphological Adaptations ¹ (Provide supporting data
	Common Reed				and Remarks or on a separate sheet)
2.	Carex spp.	30	Y	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
	Sedge				
3.	Microstegium vimineum	15	N	FAC	
	Japanese Stilt Grass				
4.	Juncus effusus	15	N	OBL	¹ Indicators of hydric soil and wetland hydrology must
	Lamp Rush	<u> </u>			be present
5.		_			Definitions of Four Vegetation Strata:
		_			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.		_			diameter at breast height (DBH), regardless of height.
7					
		_			
	Total Cover: 90	50% of total cover	45%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	18%		3in. DBH and greater than 3.28 ft (1m) tall.
	oody Vine Stratum ()				
1.		_			Herb - All herbaceous (non-woody) plants, regardless of size,
					and woody plants less than 3.28 ft tall.
2.					
_					Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
4.					Hydrophytic
	T-t-LO	500/ of total accord	00/		Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
Da	manufactural rate material	20% of total cover	0%		
кe	marks: (Include photo numb	ers nere or on a separ	ate sneet.)		Herb (5-ft radius)
					Tions (5 to to action)
					\longrightarrow
			Trees and \	/ines	
			Sapling/Shr		
			(15-ft radiu	is)	
		L			

Project/Site:	: I-64 /High Rise Bridge Corridor Study
TOJECT/OITE.	. 1-04 / High Rise Dridge Corridor Study

 Sampling date:
 4/21/2014

 Sampling point:
 WL-73

Soil								
Profile Des	scription: (Describe to the	depth need	led to document t	he indicator	or confirm th	e absence of	f indicators.)	
Depth	Matrix			Redox Fea	itures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks
0-5	10YR 2/1	100	()		- 17 -0		loam	
5-15	10YR 3/1	100					sandy loam	
15+	10YR 5/1	100					sandy clay loam	-
10+	10110 3/1	100					Sandy Clay Ioani	
	-							
	-							
1T	December D. Decletica	DM Dadus	- I M-tris MC M-	ll Ol O -			21 ti DI D Li	in a NA NASASI.
	Concentration, D=Depletion,				ains.		² Location: PL=Pore Lin	
1	I Indicators: (Applicable t	o all LRRS,		,	(00) (1.55.4		for Problematic Hydric S	
_	sol (A1)				e (S8) (LRR S	_	1cm Muck (A9) (LRR (
	Epipedon (A2)				(LRR S, T, U)	_	2cm Muck (A10) (LRR	•
_	Histic (A3)			ky Mineral (F		_		(outside MLRA 150A,B)
	gen Sulfide (A4)			yed Matrix (F2	2)	_		oils (F19) (LRR P, S, T)
_	ed Layers (A5)		X Depleted M			_	Anomalous Bright Loar	ny Soils (F20)
Organ	nic Bodies (A6) (LRR P, T,	U)	Redox Dark	k Surface(F6)			(MLRA 153B)	
5 cm	Mucky Mineral (A7) (LRR F	P, T, U)		ark Surface (•	_	Red Parent Material (T	F2)
Muck	Presence (A8) (LRR U)		Redox Dep	ressions (F8)		_	Very Shallow Dark Surf	face (TF12) (LRR T, U)
1cm N	Muck (A9) (LRR P, T)		Marl (F10)	(LRR U)		_	Other (Explain in Rema	arks)
Deple	eted Below Dark Surface (A	11)	Depleted O	chric (F11) (MLRA 151)			
Thick	Dark Surface (A12)		Iron-Manga	inese Masses	(F12) (LRR (O, P, T)	³ Indicators of hydrophy	tic vegetation and
Coast	tal Prairie Redox (A16) (ML	.RA 150A)	Umbric Sur	face (F13) (L	_RR P, T, U)		wetland hydrology mus	t be present,
Sandy	y Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (MLi	RA 151)		unless disturbed or pro	blematic
Sandy	y Gleyed Matrix (S4)		Reduced V	ertic (F18) (N	/ILRA 150A, 1	50B)		
Sandy	y Redox (S5)		Piedmont F	loodplain So	ils (F19) (MLI	RA 149A)		
Stripp	ed Matrix (S6)		Anomalous	Bright Loam	y Soils (F20)	(MLRA 149A	, 153C, 153D)	
Dark S	Surface (S7) (LRR P, S, T,	U)						
Restrictive	Layer (if observed):							
Type:								
Depth ((inches):					Hydric Soils	s Present? YES	X No
								<u> </u>
Remarks:								

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 4/21/2014 State: VA Sampling Point: WL-74 Applicant/Owner: VDOT Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0-1% 36° 46' 12.61" Subregion (LRR or MLRA): LRR T WGS 84 Lat: Long: 76° 21' 37.16" Datum: Soil Map Unit Name: Tomotley-Deloss complex PFO4Ed NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation __ ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PFO Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the east of I-64 off ramp and does not have a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): 3" Water Table Present? Depth (inches): Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

	Project/Site:	I-64 /High Rise Bridg	ge Corridor Stu	udy	
	1 10,000,0115.	101/11/9/11/42	JO 00	uay	 Sampling date: 4/21/2014
					Sampling point: WL-74
Ve	getation (Four Strata) - Use	scientific names of	nlants.		
•	gotter ()	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tre	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.	Pinus taeda	30	Y	FAC	That are OBL, FACW, or FAC: 6 (A)
	Loblolly Pine				
2.	Acer rubrum	25	Υ	FAC	Total number of Dominant
	Red maple				Species across All Strata: 6 (B)
3.	Liquidambar styraciflua	10	N	FAC	
	Sweet-Gum				Percent of Dominant Species
4.	Quercus nigra		N	FAC	That are OBL, FACW, or FAC: 100% (A/B)
	Water Oak				(, ,
	Total Cover: 70	50% of total cover	35%		
		20% of total cover	14%	-	Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)				Total % Cover of Multiply by:
	Clethra alnifolia	20	Y	FACW	OBL species x 1 =
	Coastal Sweet-Pepperbush				FACW species x 2 =
2	Quercus nigra	15	Y	FAC	FAC species x 3 =
	Water Oak				FACU species x 4 =
3.	Magnolia grandiflora	2	N	FAC	UPL species x 5 =
J.	Southern Magnolia			<u> </u>	Column Totals: (A) (B)
4.	Southern Magnolla				Prevalence Index = B/A =
4.					Frevalence index = D/A =
5					
5					I hydron hydio Monototion Indicators.
	T + 1 0	- FOO(100/		Hydrophytic Vegetation Indicators:
	Total Cover: 37	50% of total cover	19%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	7%		x 2 - Dominance Test is >50%
He	rb Stratum ()				3 - Prevalence Index is ≤3.0 ¹
1.	Pinus taeda	10	Y	FAC	4 - Morphological Adaptations ¹ (Provide supporting data
	Loblolly Piine				and Remarks or on a separate sheet)
2.	Toxicodendron radicans	5	Y	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
	Eastern Poison Ivy				
3.	Smilax rotundifolia	3	N	FAC	
٠.	Horsebrier				
4.	11010021101				¹ Indicators of hydric soil and wetland hydrology must
4.		-			be present
5.					Definitions of Four Vegetation Strata:
J.		- —			Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
c					diameter at breast height (DBH), regardless of height.
6.					diameter at breast neight (DBH), regardless of height.
_					
/					
	Total Cover: 18	50% of total cover	9%		Sapling /Shrub - Woody plants, excluding vines, less than
		20% of total cover	4%		3in. DBH and greater than 3.28 ft (1m) tall.
Wc	oody Vine Stratum ()				
1.		_			Herb - All herbaceous (non-woody) plants, regardless of size,
					and woody plants less than 3.28 ft tall.
2.					
					Woody Vine - All woody vines greater than 3.28 ft in height.
3.					, , , , , , , , , , , , , , , , , , , ,
	-				
4.	-				Hydrophytic
٠.					Vegetation
	Total Cover: 0	50% of total cover	0%		I
	Total Cover.		0%		Present? Yes X No
<u></u>	manus. (Implicate maste militate	20% of total cover			
	marks: (Include photo number				Herb (5-ft radius)
Pin	nus taeda tree stratum is more	dominant in the south	heast portion of	of the wetland) Tiers (5 Terusias)
					\longrightarrow
			Trees and \	/ines	
			Trees and 1	, mes	
		r			
			Sapling/Shr	ub	
			(15-ft radiu		
			(25) () () ()	,,,,	

Project/Site:	: I-64 /High Rise Bridge Corridor Study
TOJECT/OITE.	. 1-04 / High Rise Dridge Corridor Study

Sampling date: 4/21/2014
Sampling point: WL-74

Soil									
Profile Des	cription: (Describe to the	depth need	ed to document th	ne indicator	or confirm th	e absence of	f indicators.)		
Depth	Matrix			Redox Fea	atures				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc2	Texture	Remarks	
0-9	10YR 2/1	100					loam		
9-14	10YR 4/1	100					fine sandy loam		
14-17	10YR 5/1	100					fine sandy loam		
14-17	10113/1	100					ille salidy loaili		
									
	oncentration, D=Depletion,				rains.		² Location: PL=Pore Lini	•	
-	Indicators: (Applicable t	to all LRRs,		•			for Problematic Hydric Sc		
Histoso	, ,				e (S8) (LRR S		_ 1cm Muck (A9) (LRR C		
Histic I	Epipedon (A2)		Thin Dark S	Surface (S9)	(LRR S, T, U	_	2cm Muck (A10) (LRR	S)	
	Histic (A3)			ky Mineral (F		_	_ ` ' '	outside MLRA 150A,B)	
Hydrog	gen Sulfide (A4)		Loamy Gley	ed Matrix (F	2)	_	Piedmont Floodplain Sc	oils (F19) (LRR P, S, T)	
Statifie	d Layers (A5)		X Depleted M	atrix (F3)		_	Anomalous Bright Loam	ny Soils (F20)	
Organi	c Bodies (A6) (LRR P, T,	U)	Redox Dark	Surface(F6)		(MLRA 153B)		
5 cm M	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted D	ark Surface ((F7)	_	Red Parent Material (TF	⁻ 2)	
Muck F	Presence (A8) (LRR U)		Redox Dep	ressions (F8)		Very Shallow Dark Surfa	ace (TF12) (LRR T, U)	
1cm M	uck (A9) (LRR P, T)		Marl (F10)	LRR U)			Other (Explain in Rema	rks)	
Deplet	ed Below Dark Surface (A	11)	Depleted O	chric (F11) ((MLRA 151)				
Thick [Dark Surface (A12)		Iron-Manga	on-Manganese Masses (F12) (LRR O, P, T)			3Indicators of hydrophyt	ic vegetation and	
			mbric Surface (F13) (LRR P, T, U) wetland hydrology must be present,						
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	Ita Ochric (F17) (MLRA 151) unless disturbed or problematic					
Sandy	Gleyed Matrix (S4)	•	Reduced V	ertic (F18) (I	MLRA 150A, 1	150B)			
_	Redox (S5)		Piedmont F	loodplain So	oils (F19) (ML I	RA 149A)			
_	ed Matrix (S6)			•	. , .	•	, 153C, 153D)		
	urface (S7) (LRR P, S, T,	U)		J	, ,	`	, ,		
	Layer (if observed):	-,							
Type:									
туро.									
Depth (i	nches).					Hydric Soils	s Present? VFS	X No	
Deptil (i	nones).					riyuric oon.	STIESERE: ILO	<u> </u>	
Remarks:									
rtomanto.									

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 4/22/2014 State: VA Applicant/Owner: VDOT Sampling Point: WL-75 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): toe of slope/flat Local relief (concave, convex, none): Slope (%): 0-1% none 36° 45' 24.25" Subregion (LRR or MLRA): LRR T Lat: ___ Long: 76° 16' 23.32" Datum: **WGS 84** Soil Map Unit Name: Tomotley-Urban land complex PSS1B NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation ______,Soil ____X _,or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil _____,or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Yes X Is the Sampled Area No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PEM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the south of I-64 and west of Great Bridge Blvd. and does not have a tidal influence This area has been resently disturbedby roadway improvements and is within a utility easement **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Water-Stained Leaves (B9) Field Observations: 0-3" Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Surface water is found within the wetland boudary Depressed area from the surrounding landscape

Project/Site:	I-64 /High Rise Bridg	ge Corridor Str	udy	
	, - · · · · · · ·	7	<u></u>	Sampling date: 4/22/2014
				Sampling point: WL-75
Vegetation (Four Strata) - U			,	T- , _ , , ,
T - Otre-town /Dist sizes, ff	Absolute	Dominant Species 2	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: ft) 1.	t) % Cover	Species?	Status	Number of Dominant species That are OBL, FACW, or FAC: 2 (A)
I	_			Illat are ODL, FACTV, OF LAC(A)
2.				Total number of Dominant
				Species across All Strata: 2 (B)
3.				,
				Percent of Dominant Species
4.	<u> </u>			That are OBL, FACW, or FAC: 100% (A/B)
Total Cover: 0	50% of total cover	0%		B. I are lader mediches,
Sapling /Shrub Stratum (ft)	20% of total cover	0%		Prevalence Index worksheet: Total % Cover of Multiply by:
Sap <u>iing /Shrub Stratum (it)</u> 1. <i>Salix nigra</i>		Y	OBL	OBL species x 1 =
Black Willow				FACW species x 2 =
2.				FAC species x 3 =
				FACU species x 4 =
3.				UPL species x 5 =
				Column Totals: (A) (B)
4.	<u> </u>			Prevalence Index = B/A =
5				I I I I I I I I I Partage
Total Cover: 2	50% of total cover	1%		Hydrophytic Vegetation Indicators:
Total Cover.	20% of total cover	1% 0%		1 - Rapid Test for Hydrophytic Vegetation x 2 - Dominance Test is >50%
Herb Stratum ()	20 /0 OI (O(a) 60 vo.	0 /6		3 - Prevalence Index is ≤3.0 ¹
1. Juncus effusus		Y	OBL	4 - Morphological Adaptations¹ (Provide supporting data
Lamp Rush			ODL	and Remarks or on a separate sheet)
Phragmites australis		N	FACW	Problematic Hydrophytic Vegetation¹ (Explain)
Common Reed				
3. Carex spp.	15	N	FACW	
Sedge	<u> </u>			
4. Persicaria spp.	5	N	FACW	1Indicators of hydric soil and wetland hydrology must
Smartweed				be present
5. Salix nigra	2	N	OBL	Definitions of Four Vegetation Strata:
Black Willow 6. Andropogon spp.		N	FAC	Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
6. <u>Andropogon spp.</u> Bluestem		IN	FAC	diameter at breast neight (DDH), regardess of height.
7		-		
Total Cover: 98	50% of total cover	49%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	20%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
1		. 		Herb - All herbaceous (non-woody) plants, regardless of size,
				and woody plants less than 3.28 ft tall.
2				Mandy Vinc. All woods wines greater than 2.20 ft in beingt
3.				Woody Vine - All woody vines greater than 3.28 ft in height.
J				
4.				Hydrophytic
				Vegetation
Total Cover: 0	50% of total cover	0%		Present? Yes X No
	20% of total cover	0%		
Remarks: (Include photo nur	mbers here or on a separ	ate sheet.)		Llorb /F ft radius)
				Herb (5-ft radius)
				\longrightarrow
		Trees and \	√ines	
		Canling/Chu		
		Sapling/Shr		
		(15-ft radiu	15)	

Sampling date: 4/22/2014
Sampling point: WL-75

Destile Des				!!!		L L	of in direct one \		
	cription: (Describe to the	aeptn neea	ea to aocument tr			ne absence d	of indicators.)		
Depth	Matrix			Redox Fe	eatures				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-6	10YR 4/3	100					sand		
6-17+	2.5Y 4/2	100					sand	some clay/fill	
	10YR 6/1	90	10YR 5/6	10				clay lens 10%	
¹Type: C=Co	oncentration, D=Depletion,	RM=Reduce	ed Matrix, MS=Mas	ked Sand G	Grains.		² Location: PL=Por	e Lining, M=Matrix.	
	Indicators: (Applicable t		•			Indicators	for Problematic Hyd	ric Soils³:	
Histose	`			,	ce (S8) (LRR		1cm Muck (A9) (L		
_	Epipedon (A2)				(LRR S, T, U	_	2cm Muck (A10)	·	
	Histic (A3)				(F1) (LRR O)	_		18) (outside MLRA 150A,B)	
_	gen Sulfide (A4)		Loamy Gley	-		_			
_ ` `	, ,				-2)	_		ain Soils (F19) (LRR P, S, T)	
_	ed Layers (A5)		Depleted M	, ,	2)	_		Loamy Soils (F20)	
	c Bodies (A6) (LRR P, T,	-	Redox Dark		-		(MLRA 153B)	L (TEO)	
	Mucky Mineral (A7) (LRR F	P, T, U)	Depleted Da			_	Red Parent Materi	, ,	
	Muck Presence (A8) (LRR U)			ressions (F8	3)	_	_ ′	Surface (TF12) (LRR T, U)	
1cm Muck (A9) (LRR P, T) Marl (F10) (LRR						_	Other (Explain in F	Remarks)	
Deplet	ed Below Dark Surface (A	11)	Depleted O	chric (F11)	(MLRA 151)				
Thick [Dark Surface (A12)		Iron-Manga	nese Masse	es (F12) (LRR				
Coasta	al Prairie Redox (A16) (ML	.RA 150A)	Umbric Sur	face (F13)	(LRR P, T, U)		wetland hydrology	must be present,	
Sandy	Mucky Mineral (S1) (LRR	, O, S)	Delta Ochri	c (F17) (ML	_RA 151)		unless disturbed of	r problematic	
Sandy	Gleyed Matrix (S4)		Reduced Ve	ertic (F18)	(MLRA 150A,	150B)			
X Sandy	Redox (S5)		Piedmont F	loodplain S	oils (F19) (ML	.RA 149A)			
Strippe	ed Matrix (S6)		Anomalous	Bright Loar	my Soils (F20)	(MLRA 149A	A, 153C, 153D)		
Dark S	urface (S7) (LRR P, S, T,	U)		=					
	Layer (if observed):								
Type:	, , , , , , , , , , , , , , , , , , , ,								
					1				
Depth (i	nches).					Hydric Soi	Is Present?	YES X No	
Deptii (i	nones).				•	riyuric oor	is i resent:	<u> </u>	
Domarke: E	Resently disturbed soils due	to roadway	improvements						
ixemaiks. I	resently disturbed solls due	5 to Toadway	improvements						

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 4/22/2014 State: VA Sampling Point: WL-76 Applicant/Owner: VDOT Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): toe of slope/flat Local relief (concave, convex, none): Slope (%): 0-1% none 36° 46' 03.20" Subregion (LRR or MLRA): LRR T Lat: ___ Long: 76° 15' 46.66" Datum: **WGS 84** Soil Map Unit Name: Tomotley-Urban land-Nimmo complex NWI classification: N/A Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation ______,Soil ____X _,or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation Soil ____, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PEM Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located west of I-64 and does not have a tidal influence Adjacent to I-64 and soundwall **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) Χ High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Χ Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) X Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Χ Iron Deposits (B5) Other (Explain in Remarks) Shallow Aquitard (D3) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Water-Stained Leaves (B9) Field Observations: 0-2" Surface Water Present? Depth (inches): 0" Water Table Present? Depth (inches): 0" Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Surface water is found within the wetland boudary Depressed area from the surrounding landscape

	Project/Site:	I-64 /High Rise Bridg	ge Corridor Str	udy	
			1	<u>,</u>	Sampling date: 4/22/2014
					Sampling point: WL-76
Ve	getation (Four Strata) - Use				
_		Absolute	Dominant	Indicator	Dominance Test worksheet:
	ee Stratum (Plot sizes: ft)	% Cover	Species?	Status	Number of Dominant species
1.			· 		That are OBL, FACW, or FAC: (A)
					.
2.					Total number of Dominant
			<u> </u>		Species across All Strata: 2 (B)
3.		<u> </u>			<u> </u>
					Percent of Dominant Species
4.					That are OBL, FACW, or FAC: 100% (A/B)
	Total Cover: 0	50% of total cover	0%		
		20% of total cover	0%		Prevalence Index worksheet:
Sa	pling /Shrub Stratum (ft)				Total % Cover of Multiply by:
1.	, , , , , , , , , , , , , , , , , , ,				OBL species x 1 =
••					FACW species x 2 =
2.					FAC species x 3 =
۷.					FACU species x 4 =
3.					UPL species
ა.					
	-				Column Totals: (A) (B)
4.					Prevalence Index = B/A =
_					.
5					
					Hydrophytic Vegetation Indicators:
	Total Cover: 0	50% of total cover	0%		1 - Rapid Test for Hydrophytic Vegetation
		20% of total cover	0%		x 2 - Dominance Test is >50%
He	erb Stratum ()			·	3 - Prevalence Index is ≤3.0 ¹
1.	Juncus effusus	50	<u> </u>	OBL	4 - Morphological Adaptations¹ (Provide supporting data
	Lamp Rush	_			and Remarks or on a separate sheet)
2.	Typha latifolia		Y	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
_	Broad-Leaf Cat-Tail				
3.	Phragmites australis		N	FACW	
О.	Common Reed	<u> </u>		17.0	
4.			N	FACU	¹ Indicators of hydric soil and wetland hydrology must
٦.	Bedstraw			17.00	be present
5.	Scirpus cyperinus		N	OBL	Definitions of Four Vegetation Strata:
J.	Cottongrass Bulrush		IN	<u> </u>	Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.	Collongiass Builden				diameter at breast height (DBH), regardless of height.
Ь.	-				diameter at breast neight (DBH), regardless of height.
_					.
1					.
	Total Cover: 77	50% of total cover	39%		Sapling /Shrub - Woody plants, excluding vines, less than
	-	20% of total cover	15%		3in. DBH and greater than 3.28 ft (1m) tall.
	oody Vine Stratum ()				.
1.					Herb - All herbaceous (non-woody) plants, regardless of size,
		_			and woody plants less than 3.28 ft tall.
2.					.
					Woody Vine - All woody vines greater than 3.28 ft in height.
3.					
4.					Hydrophytic
					Vegetation
	Total Cover: 0	50% of total cover	0%		Present? Yes X No
	1010. 0010	20% of total cover	0%		
Re	marks: (Include photo numb				
110	mano. (moiddo prioto na	JOIS HOLD OF OIL & SOPE.	ato siloot.,		Herb (5-ft radius)
		ſ			\longrightarrow
			Trees and V	√ines	
		l			
			Sapling/Shr		
			(15-ft radiu	ıs)	
		L			

D:	1 0 4 /1 1: 1-	Disa Dalatas	O Ot I.	
Project/Site:	1-64 /HIGN	Rise Bridge	Corridor Study	/

Sampling date: 4/22/2014
Sampling point: WL-76

	scription: (Describe to the	depth need	ed to document th			e absence	of indicators.)			
Depth	Matrix		<u> </u>	Redox Fea						
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks		
0-3	10YR 6/1	100	10)/5 5/0				silty clay loam			
3-5	10YR 6/1	85	10YR 5/6	15			sandy clay loam	oxidized rhizospheres		
5-8	10YR 6/1	100	10)/5 //0				clay · · ·	-		
8-9	10YR 6/1	95	10YR 4/6	5			sandy clay loam	-		
9-15+	10YR 5/1	100					loamy sand	-		
1T	Description D. Description	DM Darker	-I Matrice MC Marel				21ti DI D	Lining M. Martain		
	Concentration, D=Depletion,		,		ains.	la di satana	² Location: PL=Pore	*·		
1 -	I Indicators: (Applicable t	o ali LKKS,		•	(CO) (LDD (for Problematic Hydri			
_	sol (A1)				(S8) (LRR (_	1cm Muck (A9) (LF	•		
	Epipedon (A2)				(LRR S, T, U	_	2cm Muck (A10) (L	•		
	Histic (A3)			ky Mineral (F		-		8) (outside MLRA 150A,B)		
	gen Sulfide (A4)			ed Matrix (F:	2)	_		n Soils (F19) (LRR P, S, T)		
_	ed Layers (A5)		X Depleted M	. ,		_	Anomalous Bright L	.oamy Solis (F20)		
_	nic Bodies (A6) (LRR P, T,	-		Surface(F6)			(MLRA 153B)	L(TEO)		
	Mucky Mineral (A7) (LRR F	-, 1, 0)		ark Surface (*	-	Red Parent Materia			
	Presence (A8) (LRR U)			essions (F8)		-		Surface (TF12) (LRR T, U)		
_	Muck (A9) (LRR P, T)	14\	Marl (F10) (-	MI DA 454)	-	Other (Explain in Re	ernarks)		
_ '	ted Below Dark Surface (A1	11)		chric (F11) (•	3 D T\	3Indicators of budge	phytic vegetation and		
_	Thick Dark Surface (A12) Iron-Manganese Masses Coastal Prairie Redox (A16) (MLRA 150A) Umbric Surface (F13) (I						-	phytic vegetation and		
					e (F13) (LRR P, T, U) wetland hydrology must be present, F17) (MLRA 151) unless disturbed or problematic					
_	/ Mucky Milleral (S1) (LKK) / Gleyed Matrix (S4)	, 0, 3)			/LRA 150A, 1	EOD)	uniess disturbed of	problematic		
_ '	/ Redox (S5)				ils (F19) (ML i	-				
_	ed Matrix (S6)			•	, , ,	•	A, 153C, 153D)			
	Surface (S7) (LRR P, S, T,	IIV	Anomaious	Dright Loam	y 30113 (1 20)	(WEINA 143	A, 1330, 133 <i>D)</i>			
	Layer (if observed):	0,								
Type:	Layer (ii observea).									
турс.										
Denth ((inches):					Hydric Soi	ils Present? YE	ES X No		
Ворит	inonco).					11,4110 001		<u> </u>		
Remarks:										

Wetland Determination Data Form- Atlantic and Gulf Coastal Plain Region Project/Site: I-64 /High Rise Bridge Corridor Study City/County: City of Chesapeake Sampling Date: 4/22/2014 State: VA Applicant/Owner: VDOT Sampling Point: WL-77-78 Investigator(s): Glenn Wilson and David Kwasniewski Section, Township, Range: Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): Slope (%): 0-1% none Subregion (LRR or MLRA): LRR T 36° 46' 25.38" Lat: Long: 76° 16' 32.31" Datum: **WGS 84** Soil Map Unit Name: Tomotley-Urban land-Nimmo complex PFO1B NWI classification: Are climatic / hydrologic conditions on the site typical for this time of year? X No (If no, explain in Remarks.) Are Vegetation __ ,Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes Are Vegetation ,Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS-Attach site map showing sampling point locations, transects, important features, etc. Yes X Hydrophytic Vegetation Present? No Hydric Soil Present? Is the Sampled Area Yes No Wetland Hydrology Present? Yes X Within a Wetland? Remarks: PFO Wetland Wetland lat and long were taken approximately in the middle of the wetland (not soil bore location) This wetland is located to the east of I-464 and does not have a tidal influence **HYDROLOGY** Wetland Hydrology Indicators: Secondary Indicators (minimum of two required) Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6) Surface Water (A1) Aquatic Fauna (B13) Sparsely Vegetated Concave Surface (B8) High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Saturation (A3) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16) Water Marks (B1) Oxidized Rhizospheres on Living Roots (C3) Dry-Season Water Table (C2) Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Drift Deposits (B3) Recent Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2) Other (Explain in Remarks) Shallow Aquitard (D3) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U) Χ Water-Stained Leaves (B9) Field Observations: Surface Water Present? Depth (inches): Water Table Present? Depth (inches): 0-6' Saturation Present? Depth (inches): Wetland Hydrology Present? X No (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

Project/Site:	I-64 /High Rise Brid	lge Corridor Stu	ıdy	
,	J	J	•	Sampling date: 4/22/2014
V		1		Sampling point: WL-77-78
Vegetation (Four Strata)	 Use scientific names of p Absolute 	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes:		Species?	Status	Number of Dominant species
1. Acer rubrum	40	Y	FAC	That are OBL, FACW, or FAC:5 (A)
Red maple		· ——·		(·)
Liquidambar styraciflus	a 40	Y	FAC	Total number of Dominant
Sweet-Gum				Species across All Strata: 6 (B)
3.				
				Percent of Dominant Species
4				That are OBL, FACW, or FAC: 83% (A/B)
Total Cover: 80	500/ - 11-1-1	400/		
Total Cover: 80	50% of total cover 20% of total cover	40% 16%		Prevalence Index worksheet:
Sapling /Shrub Stratum (ft		10%		Total % Cover of Multiply by:
1. Acer rubrum	10	Y	FAC	OBL species x 1 =
Red maple		- 	1710	FACW species x 2 =
2.				FAC species x 3 =
				FACU species x 4 =
3.				UPL species x 5 =
				Column Totals:(A)(B)
4				Prevalence Index = B/A =
5				Hydrophytic Vegetation Indicators:
Total Cover: 10	50% of total cover	5%		1 - Rapid Test for Hydrophytic Vegetation
Total Gover:	20% of total cover	2%		x 2 - Dominance Test is >50%
Herb Stratum ()	2070 01 10101 00101	_,,	•	3 - Prevalence Index is ≤3.0 ¹
Smilax rotundifolia	30	Y	FAC	4 - Morphological Adaptations¹ (Provide supporting data
Horsebrier				and Remarks or on a separate sheet)
2. Lonicera japonica	30	Y	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
Japanese Honeysuckl	e			
Toxicodendron radical	ns 20	Y	FAC	
Eastern Poison Ivy				
4. Parthenocissus quinqu	uefolia 10	N	FACU	¹Indicators of hydric soil and wetland hydrology must
Virginia-Creeper			OPI	be present Definitions of Four Vegetation Strata:
5. <u>Juncus effusus</u> Lamp Rush	2	N	OBL	Tree - Woody plants, excluding vines, 3in. (7.6 cm) or more in
6.		· 		diameter at breast height (DBH), regardless of height.
·				diamoter at broadt holght (BBH), regardless of helght.
7				
Total Cover: 92	50% of total cover	46%		Sapling /Shrub - Woody plants, excluding vines, less than
	20% of total cover	18%		3in. DBH and greater than 3.28 ft (1m) tall.
Woody Vine Stratum ()				
1		· ——		Herb - All herbaceous (non-woody) plants, regardless of size,
2.				and woody plants less than 3.28 ft tall.
Z				Woody Vine - All woody vines greater than 3.28 ft in height.
3.				Troody Vine 7th Woody Vines greater than 6.25 it in height.
·		-	•	
4.				Hydrophytic
				Vegetation
Total Cover: 0		0%		Present? Yes X No
5	20% of total cover	0%		
Remarks: (Include photo r	numbers here or on a separa	ite sheet.)		Herb (5-ft radius)
		Trees and V	'ines	
		Sapling/Shr	ub	
		(15-ft radiu		

Corridor Study

Sampling date: 4/22/2014
Sampling point: WL-77-78

Histoso	Color (moist) 10YR 2/1 10YR 4/1 10YR 6/1	% 100 98 80	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
Type: C=Co	10YR 4/1	98	10VP 4/6					
0-16 Type: C=Cc Hydric Soil Histosc			10VD 1/6				silt loam	moist
Type: C=Co lydric Soil Histosc	10YR 6/1	80		2			clay loam	
lydric Soil Histoso		- 00	10YR 5/6	20			sandy clay loam	
lydric Soil Histoso								
lydric Soil Histoso								
lydric Soil Histoso								
lydric Soil Histoso	oncentration, D=Depletion,	PM-Poduo	ad Matrix, MS_Maa	kad Sand Cr	nine		² Location: PL=Pore	Liping M-Motriy
Histoso	Indicators: (Applicable t				aii i S.	Indicators	for Problematic Hydri	· · · · · · · · · · · · · · · · · · ·
_		o ali Livivs,		•	e (S8) (LRR \$		1cm Muck (A9) (LF	
Histic F	Epipedon (A2)				(LRR S, T, U	_	2cm Muck (A10) (L	•
	Histic (A3)			ky Mineral (F	-	_		8) (outside MLRA 150A,B)
	en Sulfide (A4)			ed Matrix (F2		_	-	n Soils (F19) (LRR P, S, T)
	d Layers (A5)		X Depleted M	•	-,	-	Anomalous Bright L	, , , , , , ,
_	c Bodies (A6) (LRR P, T,	U)		Surface(F6)		-	(MLRA 153B)	50110 (1 20)
	lucky Mineral (A7) (LRR F	-		ark Surface (Red Parent Materia	I (TF2)
	Presence (A8) (LRR U)	, ., . ,		ressions (F8)	•	_		Surface (TF12) (LRR T, U)
	uck (A9) (LRR P, T)		Marl (F10) (, ,		-	Other (Explain in Re	
	ed Below Dark Surface (A	1)		chric (F11) (MLRA 151)	-		s.mame,
	Dark Surface (A12)	••,		· , ·	(F12) (LRR (D. P. T)	3Indicators of hydro	phytic vegetation and
_	I Prairie Redox (A16) (ML	RA 150A)		face (F13) (L	, , ,	-, - , -,	wetland hydrology r	
_	Mucky Mineral (S1) (LRR	•		c (F17) (MLF			unless disturbed or	·
	Gleyed Matrix (S4)	-, -,			/ILRA 150A, 1	50B)		F
_ ′	Redox (S5)			· , ·	is (F19) (ML I	•		
	d Matrix (S6)			•	. , .		A, 153C, 153D)	
	urface (S7) (LRR P, S, T,	U)	_		, ,	`		
	Layer (if observed):	•						
Type:								
Depth (ir	nches):					Hydric Soi	ils Present? YE	ES <u>X</u> No
temarks:								



		Sire	Unif	ied Stream N	lethodology f	or use in Virg		m 1)			
Project #		Project Name		Locality	nels classified a Cowardin Class.	s intermittent or	perennial Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High	I-64 / High Rise Bridge Corridor Study Che			R3	0208020802	2/5/2014	1	1321	N/A	
	ne(s) of Evaluator(s) Stream Name										
Glenn W	ilson & Dave Kwa	sniewski	Tributary of	Newton Cree	k						
. Channel (Condition: Ass	ess the cross-sec	tion of the stream		ondition (erosion, Conditional Catego						
	Opt	imal			vere						
	The state of the s	الموالد الموالد	The state of the s		1	5				5	
Channel Condition	or natural rock, pro AND/OR Stable point are present. Acce floodplain or fully dev	tive surface protection minent (80-100%). bars/bankfull benches iss to their original eloped wide bankfull I bars, and transverse sediment deposition	stable (60-80%). Ve natural rock promine Depositional features The bankfull and low defined. Stream likely benches, or newly d along portions of the	Majority of banks are regetative protection or nt (60-80%) AND/OR contribute to stability. flow channels are well has access to bankfull eveloped floodplains he reach. Transient 0-40% of the stream	to lower bank slope present on 40-60% of protection on 40-60% may bevertical or unde of stream is covered It may be temporary instability. Depositi stability, may be formir shaped channels have on > 40% of the bai	s than Severe or Poor. an Severe or Poor due is. Erosion may be both banks. Vegetative of banks. Streambanks rcut. AND/OR 40-60% ys ediment. Sediment transient, contribute on that contribute to the protection (present. AND/OR V- e vegetative protection nks and depositional Intribute to stability.	Overwidened/incises unstable. Likely to wid both banks are near w on 60-80% of banks. present on 20-40° insufficient to prevent 80% of the stream is Sediment is tempora and contributing to in shaped channels have is present on > 40% o sediment depo	en further. Majority of ortical. Erosion present Vegetative protection of banks, and is erosion. AND/OR 60- covered by sediment. ry/transient in nature, stability. AND/OR V- e vegetative protection of the banks and stable	instability. Severe ir within the banks. Strr rooting depth, r vertical/undercut. \(^1\) present on less thar preventing erosion. (present. Erosion/ra' AND/OR Aggrading 80% of stream bed is contributing to inste	cavated), vertical/lateral locision, flow contained sambed below average najority of banks /egetative protection 20% of banks, is not botious bank sloughing banks on 80-100%. channel. Greater than covered by deposition, bitty. Multiple thread subterranean flow.	CI
				.4		2	1.6				
Score	3	3				rty downstrean				1	2.0
NIFANIAI	N BUFFERS: /		Con	ditional Cate	gory	ginal		oor	NOTES>>		
Riparian Buffers	Tree stratum (dbh : with > 60% tree ca non-maintained und located within th	anopy cover and a derstory. Wetlands	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non- maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
			High	Low	High	Low	High	Low			
Condition Scores	1.	.5	1.2	1.1	0.85	0.75	0.6	0.5			
. Delineate ripa	arian areas along o			•		•		he sums tiparian			
2. Determine so pelow.	Riparian Area and	Score for each rip	parian category in	the blocks below			Blocks e	qual 100			
Determine so elow. Enter the % F	% Riparian Area>	50%	50%	the blocks below			Blocks e	qual 100 100%			
. Determine so elow.				the blocks below			Blocks e	•	Cl= (Sum % RA **	Scores*0.01)/2	
Determine so lelow. Enter the % F	% Riparian Area>	50%	50%	the blocks below			Blocks e	•	Cl= (Sum % RA * :	Scores*0.01)/2 0.90	CI
Determine so elow. Enter the % I Right Bank Left Bank	% Riparian Area> Score > % Riparian Area> Score >	50% 1.2 50% 1.5	50% 0.6 50% 0.6					100%	Rt Bank CI >	0.90 1.05	CI 0.98
Determine so elow. Enter the % f Right Bank Left Bank INSTREA	% Riparian Area> Score > % Riparian Area> Score > M HABITAT: Va	50% 1.2 50% 1.5 aried substrate si	50% 0.6 50% 0.6 zes, water velocity	v and depths; woo		ris; stable substrat		100%	Rt Bank CI > Lt Bank CI > NOTES>>so	0.90 1.05 me leafy	
2. Determine so below. 3. Enter the % F Right Bank Left Bank 3. INSTREAL undercut banks;	% Riparian Area> Score > % Riparian Area> Score > M HABITAT: V: root mats; SAV; ri	50% 1.2 50% 1.5 aried substrate si	50% 0.6 50% 0.6 zes, water velocity xes, stable feature	v and depths; woo	ody and leafy debi	ris; stable substrat	e; low embededn	100%	Rt Bank CI >	0.90 1.05 me leafy e undercut	
2. Determine so below. 3. Enter the % F Right Bank Left Bank 3. INSTREAL	% Riparian Area> Score > % Riparian Area> Score > M HABITAT: V: root mats; SAV; ri	50% 1.2 50% 1.5 arried substrate si ffle poole comple imal	50% 0.6 50% 0.6 ces, water velocity xes, stable feature Subol Stable habitat eler present in 30-50% are adequate for	v and depths; woo es. Conditions ptimal	ody and leafy debi		e; low embededn Pc Habitat elements lacking or are ui	100% 100% 100% ess; shade; oor listed above are nestable. Habitat ally present in less	Rt Bank CI > Lt Bank CI > NOTES>>so debris; som banks; trees	0.90 1.05 me leafy e undercut	

	St	ream In	npact A	ssessn	nent Fo	rm Pag	e 2		
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT		Chesapeake	R3	0208020802	2/5/2014	1	1321	N/A
	_ ALTERATION: Stream cross poil piles, constrictions, livestock		Condition	al Category				NOTES>>do culvert and banks upstr	riprap along
	Negligible	Mii	nor		erate 60 - 80% of reach	Se	vere	maintained	
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	of the channel	is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered	Greater than 80% by any of the chan in the parameter \$80% of banks sh	of reach is disrupted inel alterations listed guidelines AND/OR nored with gabion, or cement.		•
SCORE	1.5	1.3	1.1	0.9	0.7	0).5		
	REACH C	ONDITION II	NDEX and S	STREAM CO	NDITION UN	ITS FOR TH	IS REACH		
NOTE: The Cls and R	CI should be rounded to 2 decimal places.	The CR should be rour	nded to a whole numb	per.			THE REACH (CONDITION IN	DEX (RCI) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 1 looking downstream.



DESCRIBE PROPOSED IMPACT:	

	Str		fied Stream N	lethodology 1	Form for use in Virgons intermittent or	ginia	m 1)			
Project #	Project Nar		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Bridge C	-	Chesapeake	R4	0208020802	2/5/2014	2	315	N/A	
	e(s) of Evaluator(s) Stream Name and Inform									
	ilson & Dave Kwasniewski	-	Newton Cree							
1. Channel C	Condition: Assess the cross-s		(Conditional Catego	ory					
	Optimal	Subo	ptimal	Mar	ginal	Pe	oor	Sev	vere	
	White May	Tu .		1	5	all			5	
Channel Condition	Very little incision or active erosion: 80-101 stable banks. Vegetative surface protect or natural rock, prominent (80-100%). AND/OR Stable point bars/bankful bench are present. Access to their original floodplain or fully developed wide bankful benches. Michannel bars, and transver bars few. Transient sediment deposition covers less than 10% of bottom.	unprotected banks. stable (60-80%). Vi natural rock promine Depositional features The bankfull and low defined. Stream likely benches, or newly o along portions of t sediment covers 11	eas of active erosion or Majority of banks are egetative protection or nrt (60-80%) AND/DOR contribute to stability. Those can be access to bankfull leveloped floodplains the reach. Transient 0-40% of the stream torm.	Banks more stable the to lower bank slop present on 40-60% of protection on 40-60% of protection on 40-60% may bevertical or undo of stream is covered may be temporary instability. Deposit stability, may be form shaped channels hav on > 40% of the be	is than Severe or Poor, an Severe or Poor due so. Erossion may be both banks. Vegetative of banks. Streambanks ercut. AND/OR 40-60% by sediment. Sediment fransient, contribute to not present. AND/OR V- e vegetative protection inks and depositional mithoute to stability.	unstable. Likely to with both banks are near von 60-80% of banks. present on 20-40 insufficient to preven 80% of the stream is Sediment is temporand contributing to is shaped channels have is present on > 40% of the stream is present on > 40% o	d. Vertically/laterally len further. Majority of ertical. Erosion present Vegetative protection % of banks, and is e crosion. AND/OR 60- covered by sediment. any/transient in nature, nstability. AND/OR V- e vegetative protection of the banks and stable sition is absent.	Deeply incised (or exceinstability. Severe inc. instability. Severe inc. within the banks. Stree rooting depth, in vertical/undercut. V/ present on less than: preventing erosion. O/ present. Erosion/raw AND/OR Aggrading c 80% of stream bed is c contributing to instate channels and/or sr	cision, flow contained ambed below awerage lajority of banks egetative protection 20% of banks, is not bvious bank sloughing r banks on 80-100%. channel. Greater than covered by deposition, bifty. Multiple thread	
										CI
Score	3	2	2.4		2	1	.6	1	1	2.4
NOTES>>	no	slumping on b	anks; banks	mostly stable	; little erosio	n; adjacent to	on-ramp roa	dway		
Riparian	Optimal Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) nt, present, with 30%	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub	Low Marginal: Non- maintained, dense herbaceous vegetation, riparian areas lacking shrub	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland;	Low Poor: Impervious surfaces, mine			
Buffers	non-maintained understory. Wetlan located within the riparian areas.		maintained understory. Recent cutover (dense vegetation).	layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	actively grazed pasture, sparsely vegetated non- maintained area, recently seeded and stabilized, or other comparable condition.	spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Buffers		ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	maintained understory. Recent cutover (dense vegetation).	layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	pasture, sparsely vegetated non- maintained area, recently seeded and stabilized, or other comparable condition.	spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Condition		ds canopy cover and containing both herbaceous and shrub layers or a non-maintained	maintained understory. Recent cutover (dense	layer or a tree layer (dbh > 3 inches) present, with <30% tree	production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained	pasture, sparsely vegetated non- maintained area, recently seeded and stabilized, or other comparable	spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable			
Condition Scores 1. Delineate rips descriptors. 2. Determine so below.	1.5 arian areas along each stream be quare footage for each by measur	ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coing or estimating lei	maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth cutoff cut	layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 addition Scores us calculators are pro-	production, ponds, open water. If present, tree stratum (dbh > 5 nches) present, with <30% tree canopy cover with maintained understory. Low 0.75	pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5			
Condition Scores 1. Delineate rips descriptors. 2. Determine so below.	1.5 arian areas along each stream be quare footage for each by measure. Riparian Area and Score for each was repaired.	ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition C ting or estimating let riparian category in 80%	maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth cutoff cut	layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 addition Scores us calculators are pro-	production, ponds, open water. If present, tree stratum (dbh > 5 nches) present, with <30% tree canopy cover with maintained understory. Low 0.75	pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5			
Condition Scores 1. Delineate rips descriptors. 2. Determine so below. 3. Enter the % F	1.5 arian areas along each stream be quare footage for each by measur	ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coing or estimating lei	maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth cutoff cut	layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 addition Scores us calculators are pro-	production, ponds, open water. If present, tree stratum (dbh > 5 nches) present, with <30% tree canopy cover with maintained understory. Low 0.75	pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	CI= (Sum % RA * S	scores*0.01)/2	
Condition Scores Delineate rips descriptors. Descriptors	1.5 arian areas along each stream be quare footage for each by measure Riparian Area and Score for each % Riparian Area 20% Score > 1.5 % Riparian Area> 15%	ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coing or estimating let riparian category in 80% 0.5	maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth cutoff cut	layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 addition Scores us calculators are pro-	production, ponds, open water. If present, tree stratum (dbh > 5 nches) present, with <30% tree canopy cover with maintained understory. Low 0.75	pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	Rt Bank CI >	0.70	CI
Condition Scores 1. Delineate rip descriptors. 2. Determine so below. 3. Enter the % F Right Bank Left Bank 3. INSTREAR	1.5 arian areas along each stream be quare footage for each by measure. Riparian Area and Score for each was Riparian Area. Score > 1.5	ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coing or estimating let riparian category in 80% 0.5 85% 0.6 sizes, water velocit	maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth and width. Congth and depths; works.	layer or a tree layer (dbh > 3) inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us Calculators are pro	production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the	pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I Blocks 6	spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	Rt Bank CI > Lt Bank CI > NOTES>>shawater velocit	0.70 0.74 ady; varied ties; some	CI 0.72
Condition Scores 1. Delineate ripidescriptors. 2. Determine sobelow. 3. Enter the % F Right Bank Left Bank 3. INSTREAI undercut banks;	1.5 arian areas along each stream be quare footage for each by measure Riparian Area and Score for each % Riparian Area 20% Score > 1.5 % Riparian Area> 15% Score > 1.5 M HABITAT: Varied substrate	ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition C ing or estimating learning or estimating or estimating learning or estimating or esti	maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth and width. Congth and depths; works.	layer or a tree layer (dbh > 3) inches) present, with <30% tree canopy cover. High 0.85 adiculators are pro	production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the	pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I Blocks 6	spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	Rt Bank CI > Lt Bank CI > NOTES>>sha	0.70 0.74 ady; varied ties; some quences;	
Condition Scores 1. Delineate ripz descriptors. 2. Determine so below. 3. Enter the % F Right Bank Left Bank 3. INSTREAT undercut banks;	1.5 arian areas along each stream baguare footage for each by measure footage for each score > 1.5 % Riparian Area > 20% Score > 1.5 M HABITAT: Varied substrate root mats; SAV; riffle poole comparison.	ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coing or estimating let riparian category in 80% 0.5 85% 0.6 sizes, water velocit blexes, stable featur Stable habitat ele present in 30-50° are adequate for a result of the present in 30-50° are adequate for a containing both the right of the present in 30-50° are adequate for a containing both the right of the present in 30-50° are adequate for a containing both the right of	maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth and width. Congth and depths; wores. Condition.	layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us Calculators are pro Mar Stable habitat ele present in 10-30 are adequate for a dequate for a fine and a fine a fin	production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopt cover with maintained understory. Low 0.75 ing the povided for you	pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I Blocks 6 Habitat element lacking or are u elements are typic	spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100% 100%	Rt Bank CI > Lt Bank CI > NOTES>>sha water velocit riffle/pool see	0.70 0.74 ady; varied ties; some quences; ack; no	

	St	ream In	npact A	ssessm	nent Fo	rm Pag	e 2		
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT		Chesapeake	R4	0208020802	2/5/2014	2	315	N/A
	L ALTERATION: Stream cross spoil piles, constrictions, livestock		Condition	al Category				NOTES>>ad ramp roadw cemetary pr	•
	Negligible	Mi	nor	Mod	erate	Se	vere	natural strea	am features
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.		60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter of 80% of banks sh	of reach is disrupted nel alterations listed juidelines AND/OR lored with gabion, or cement.	observed	
SCORE	1.5	1.3	1.1	0.9	0.7	0	.5		
	REACH C	ONDITION I	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH		
NOTE: The Cls and I	RCI should be rounded to 2 decimal places	The CR should be rous	nded to a whole numb	nor .			THE REACH (CONDITION IN	DEX (RCI) >>

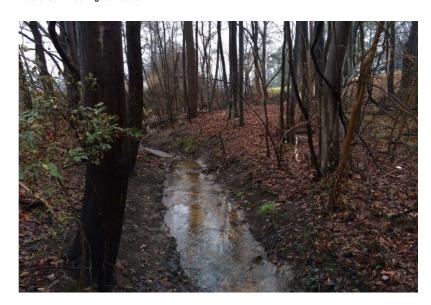
THE REACH CONDITION INDEX (RCI) >> RCI= (Sum of all Cl's)/5

COMPENSATION REQUIREMENT (CR) >> N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 2 looking downstream.



DESCRIBE PROPOSED IMPACT:	

Channel Condition: As Channel Condition: As Op Very little incision 100% stable b surface protect prominent (80) Stable point bard present. Acception of the bankfull benches and transverse sediment deposit 10% of the surface protection. Score NOTES>> Same S Op Tree stratum (dbrwith > 60% tree non-maintained u located within to	or active erosion; 80 anks. Vegetative on or natural rock, 100%, AND/OR bank to the channel bars, says few. Transient ion covers less than f bottom.	Subortion Study Stream Name Tributary of ection of the stream Subortion Su	Locality Chesapeake Lee and Inform Newton Cree Lee and prevailing companies Lee and L	Cowardin Class. R3 ation ek ondition (erosion, Conditional Catego Mar Offen incised, but les Banks more stable it to lower bank slopp present on 40-60% and fortection on 40-60% and beveritability. Deposit stability, may be formi shaped channels have on > 40% of the ban features which co	ginal sthan Severe or Poor, an Severe or Poor due ss. Erosion may be both banks. Vegetative of banks. Streambanks rout. AND/OR 40-60% ye sediment. Sediment transient, contribute on that contribute to ng/present. AND/OR Ve vegetative protection nks and depositional ntribute to stability.	Overwidened/incises unstable. Like ye to wid both banks are on 60-80% of banks. Sediment is tempora and contributing to in shaped channels have is present on > 40% of sediment depositions of the sed	In further. Majority of prical. Erosion present Vegetative protection & of banks, and is erosion. AND/OR 60- covered by sediment. ry/transient in nature, stability. AND/OR V- a vegetative protection the banks and stable sition is absent.	Deeply incised (or ex- instability. Severe in within the barks. Str rooting depth, in vertical/undercut. V present on less than preventing erosion. Erosion/ra AND/OR Aggrading 80% of stream bed is contributing to insta- channels and/or	Vere vere cavated), vertical/lateral locision, flow contained earnbed below average majority of banks, is not Devious bank sloughing wbanks on 80-100%. channel. Greater than covered by deposition, ability. Multiple thread subterranean flow.	C 2.1
Channel Condition: As Channel Condition: As Op Very little incision 100% stable b surface protect prominent (80) Stable point bard present. Acception of the bankfull benches and transverse sediment deposit 10% of the surface protection. Score NOTES>> Same S Op Tree stratum (dbrwith > 60% tree non-maintained u located within to	or active erosion; 80 canks. Vegetative on or natural rock, 100%). AND/OR bankfull benches are sto their original ly developed wide. Mid-channel bars, aars few. Transient ion covers less than if bottom.	Stream Name Tributary of ection of the stream Subo Subo Subto	reas of active erosion or Majority of banks are egetative protection or many flow companies of the companies	Often incised, but less Banks more stable in to lover bank sloppresent on 40-60% of protection on 40-60% may be temporary instability. Deposit stability, may be ormishaped channels have no > 40% of the bank eloppresent on 40-60% of the bank eloppresent of 40-60% of the bank eloppresent on 40-60% of the bank elo	aggradation) ry ginal s than Severe or Poor. an Severe or Poor an Severe or Poor described to the severe or the severe	Overwidened/incise- unstable. Likely to wid- both banks are near w on 60-80% of banks. present on 20-40° insufficient to prevent 80% of the stream is Sediment is tempora and contributing to in- shaped channels have is present on 2-40% or sediment depo	d. Vertically/laterally ten further. Majority of fortical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60- covered by sediment. ryl/transient in nature, vegetative protection the banks and stable sition is absent.	Deeply incised (or extinistability. Severe in within the banks. Str. reotical/undercut. Y present on less than preventing erosion. C present. Erosion/ra AND/OR Aggrading 80% of stream bed is contributing to insta channels and/or	vere cavated), vertical/lateral ncision, flow contained eambed below average majority of banks, is not Devious bank sloughing w banks on 80-100%. channel. Greater than covered by deposition, ability. Multiple thread subterranean flow.	
Channel Condition: As Channel Condition: As Channel Condition: As Op Channel Condition Condition Condition Condition Very little incision 100% stable be surface protect prominent (80 Stable point bars/ present Associated in the surface protect prominent (80 Stable point bars/ present deposit 10% c Score NOTES>> Score Riparian Buffers Tree stratum (db with > 60% tree non-maintained u located within t	or active erosion; 80 anks. Vegetative on or natural rock, 100%, AND/OR bank to the channel bars, says few. Transient ion covers less than f bottom.	Subor	reas of active erosion or Majority of banks are egetative protection or more flow control of the	Often incised, but les Banks more stable th to lower bank sloppresent on 40-60% of orotection on 40-60% may beveritcal or undof stream is covered may be temporary instability. Depositistability, may be formi shaped channels have on > 40% of the bank features which co	s than Severe or Poor, an Severe or Poor, an Severe or Poor due s. Eroston may be both banks. Vegetative strout. AND/OR 40-60% by sediment. Sediment transient, contribute to on that contribute to on that contribute to on that contribute to stability.	Overwidened/incises unstable. Likely to wid both banks are near w on 60-80% of banks. present on 20-40° insufficient to prevent 80% of the stream is Sediment is tempora and contributing to in shaped channels have is present on > 40% o sediment depo	d. Vertically/laterally len further. Majority of britical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60-covered by sediment. my/transient in nature, britishilty. AND/OR V-britishilty. AND/O	Deeply incised (or ex- instability. Severe in within the barks. Str rooting depth, in vertical/undercut. V present on less than preventing erosion. Erosion/ra AND/OR Aggrading 80% of stream bed is contributing to insta- channels and/or	cavated), vertical/lateral ncision, flow contained seambed below average majority of banks, egetative protection 20% of banks, is not 20% of banks, is not 20% of banks, is not covered by deposition, baltity. Multiple thread subterranean flow.	
Channel Condition: As Op Channel Condition Condition Condition Condition Very little incision 100% stable be surface protects prominent (80 Stable point bars/ present. Accer floodplain or fur bankfull benches and transverse sediment deposit 10% of Score Score NOTES>> Score Riparian Buffers Tree stratum (db' with > 60% tree non-maintained u located within to score the control of the	or active erosion; 80 anks. Vegetative on or natural rock, 100%). AND/OR bankfull benches are so to their original ly developed wide. Mid-channel bars, pars few. Transient ion covers less than if bottom.	Subo	reas of active erosion or Majority of banks are egetative protection or more to stability. AND/OR scontribute to stability has access to bankfull developed floodplains he reach. Transient 0-40% of the stream trom.	Ondition (erosion, Conditional Catego Mar Mar Often incised, but les Banks more stable th to lower bank sloop present on 40-60% of protection on 40-60% of may bevertical or und of stream is covered may be temporary instability, may be form shaped channels hav on > 40% of the ba features which co	s than Severe or Poor, an Severe or Poor, an Severe or Poor due s. Eroston may be both banks. Vegetative strout. AND/OR 40-60% by sediment. Sediment transient, contribute to on that contribute to on that contribute to on that contribute to stability.	Overwidened/incises unstable. Likely to wid both banks are near w on 60-80% of banks. present on 20-40° insufficient to prevent 80% of the stream is Sediment is tempora and contributing to in shaped channels have is present on > 40% o sediment depo	d. Vertically/laterally len further. Majority of britical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60-covered by sediment. my/transient in nature, britishilty. AND/OR V-britishilty. AND/O	Deeply incised (or ex- instability. Severe in within the barks. Str rooting depth, in vertical/undercut. V present on less than preventing erosion. Erosion/ra AND/OR Aggrading 80% of stream bed is contributing to insta- channels and/or	cavated), vertical/lateral ncision, flow contained seambed below average majority of banks, egetative protection 20% of banks, is not 20% of banks, is not 20% of banks, is not covered by deposition, baltity. Multiple thread subterranean flow.	
Channel Condition Channel Condition Channel Condition Very little incision 100% stable buffer professor protect prominent (80 Stable point bars/ present Arc/ professor prof	or active erosion; 80 anks. Vegetative on or natural rock, 100%). AND/OR bankfull benches are so to their original ly developed wide. Mid-channel bars, aars few. Transient ion covers less than f bottom.	Subo Sightly incised, few ar unprotected banks. Is stable (60-80%). Ve natural rock promine Depositional features. The bankful and low defined. Stream likely benches, or newly defined. Stream is sediment covers 10 hott	reas of active erosion or Majority of banks are egetative protection or more flow and some septiment of the protection or flow and some septiment of the protection or flow channels of the protection or flow channels of the protection of the prote	Often incised, but less Barks more stable the to lower bank slope present on 4-60% of protection on 4-00% may be writical or under stability. Deposits stability, may be cormishaped channels have on > 40% of the bafeatures which co	s than Severe or Poor, an Severe or Poor, an Severe or Poor due s. Eroston may be both banks. Vegetative strout. AND/OR 40-60% by sediment. Sediment transient, contribute to on that contribute to on that contribute to on that contribute to stability.	Overwidened/incises unstable. Likely to wid both banks are near w on 60-80% of banks. present on 20-40° insufficient to prevent 80% of the stream is Sediment is tempora and contributing to in shaped channels have is present on > 40% o sediment depo	d. Vertically/laterally len further. Majority of britical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60-covered by sediment. my/transient in nature, britishilty. AND/OR V-britishilty. AND/O	Deeply incised (or ex- instability. Severe in within the barks. Str rooting depth, in vertical/undercut. V present on less than preventing erosion. Erosion/ra AND/OR Aggrading 80% of stream bed is contributing to insta- channels and/or	cavated), vertical/lateral ncision, flow contained seambed below average majority of banks, egetative protection 20% of banks, is not 20% of banks, is not 20% of banks, is not covered by deposition, baltity. Multiple thread subterranean flow.	
Channel Condition Very little incision 100% stable be surface protect prominent (80- Stable point bars/ present. Acce floodplain or fu bankfull benches and transverse sediment deposit 10% c Score NOTES>> RIPARIAN BUFFERS: Op Tree stratum (db' with > 60% tree- non-maintained u located within to	or active erosion; 80 anks. Vegetative on or natural rock, 100%). AND/OR bankfull benches are so to their original ly developed wide. Mid-channel bars, pars few. Transient ion covers less than f bottom.	30 Slightly incised, few are unprotected banks, stable (60-80%). Ver natural rock promine The benard leafurer Depositional features The blankfull and low defined. Stream likely benches, or newly dispersions of it sediment covers to bott	reas of active erosion or Majority of banks are egetative protection of the Majority of banks are entered to the second of the control of the	Often incised, but les Banks more stable th to lower bank slop present on 40-60% of protection on 40-60% may bevertical or und of stream is covered may be temporary instability. Depositistability, may be formi shaped channels hav on > 40% of the ba features which co	s than Severe or Poor. an Severe or Poor due severe or Poor due se. Erosion may be both banks. Vegetation of banks. Streentanive of banks. Streentanive of banks. Streentanive transient, contribute on that contribute to ng/present. AND/OR V- vegetative protection nks and depositional ntribute to stability. 2 a; located at to	Overwidened/incises unstable. Likely to wid both banks are near w on 60-80% of banks. present on 20-40° insufficient to prevent 80% of the stream is Sediment is tempora and contributing to in shaped channels have is present on > 40% o sediment depo	d. Vertically/laterally len further. Majority of britical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60-covered by sediment. my/transient in nature, britishilty. AND/OR V-britishilty. AND/O	Deeply incised (or ex- instability. Severe in within the barks. Str rooting depth, in vertical/undercut. V present on less than preventing erosion. Erosion/ra AND/OR Aggrading 80% of stream bed is contributing to insta- channels and/or	cavated), vertical/lateral ncision, flow contained seambed below average majority of banks, egetative protection 20% of banks, is not 20% of banks, is not 20% of banks, is not covered by deposition, baltity. Multiple thread subterranean flow.	
Condition Condition Surface protects prominent (80 Stable point bars/ present. Acce floodplain or fur bankfull benches and transverse sediment deposit 10% c Score NOTES>> Riparian Buffers Tree stratum (db' with > 60% tree non-maintained u located within to located within the located within to	anks. Vegetative on or natural rock, 100%). AND/OR bankfull benches are sto their original ly developed wide. Mid-channel bars, bars few. Transient ion covers less than f bottom. 3 tream flow the Assess both bank	urprotected banks, is urprotected by a statural rock promine to be positional features. The bankfull and low defined. Stream likely benches, or newly disalong portions of it sediment covers 10 bott.	Majority of banks are eqetative protection or art (60-80%) AND/OR southflowed to stability. flow channels are well has access to bankfull developed floodplains he reach. Transient 0-40% of the stream trom.	Banks more stable th to lower bank slopp present on 40-60% of protection on 40-60% of protection on 40-60% may beverifical or undo stream is covered may be temporary instability. Depositistability. Depositistability may be formi shaped channels have on > 40% of the banks which co	an Severe or Poor due so. Erosion may be both banks. Vegetative of banks. Streambanks rcut. AND/OR 40-60% ys sediment. Sediment transient, contribute on that contribute to ng/present. AND/OR V- vegetative protection inck and depositional ntribute to stability.	unstable. Likely to wid both banks are near w on 60-80% of banks. present on 20-40° insufficient to prevent 80% of the stream is Sediment is tempora and contributing to in shaped channels have is present on > 40% or dependent of the sediment depo	In further. Majority of prical. Erosion present Vegetative protection & of banks, and is erosion. AND/OR 60- covered by sediment. ry/transient in nature, stability. AND/OR V- a vegetative protection the banks and stable sition is absent.	instability. Sewere in within the banks. Str rooting depth, vertical/undercut. Vertical/u	ncision, flow contained eamhed below average majority of banks Vegetative protection 120% of banks, is not Dovious bank sloughing w banks on 80-100%. charnel. Greater than covered by deposition, ability. Multiple thread subterranean flow.	
Condition Condition 100% stable be surface protect prominent (80 Stable point bars/ present. Acce floodplain or fur bankfull benches and transverse sediment deposit 10% c Score NOTES>> Riparian Buffers Tree stratum (db' with > 60% tree non-maintained u located within to located within the loca	anks. Vegetative on or natural rock, 100%). AND/OR bankfull benches are sto their original ly developed wide. Mid-channel bars, bars few. Transient ion covers less than f bottom. 3 tream flow the Assess both bank	urprotected banks, is urprotected by a statural rock promine to be positional features. The bankfull and low defined. Stream likely benches, or newly disalong portions of it sediment covers 10 bott.	Majority of banks are eqetative protection or art (60-80%) AND/OR southflowed to stability. flow channels are well has access to bankfull developed floodplains he reach. Transient 0-40% of the stream trom.	Banks more stable th to lower bank slopp present on 40-60% of protection on 40-60% of protection on 40-60% may beverifical or undo stream is covered may be temporary instability. Depositistability. Depositistability may be formi shaped channels have on > 40% of the banks which co	an Severe or Poor due so. Erosion may be both banks. Vegetative of banks. Streambanks rcut. AND/OR 40-60% ys sediment. Sediment transient, contribute on that contribute to ng/present. AND/OR V- vegetative protection inck and depositional ntribute to stability.	unstable. Likely to wid both banks are near w on 60-80% of banks. present on 20-40° insufficient to prevent 80% of the stream is Sediment is tempora and contributing to in shaped channels have is present on > 40% or dependent of the sediment depo	In further. Majority of prical. Erosion present Vegetative protection & of banks, and is erosion. AND/OR 60- covered by sediment. ry/transient in nature, stability. AND/OR V- a vegetative protection the banks and stable sition is absent.	instability. Sewere in within the banks. Str rooting depth, vertical/undercut. Vertical/u	ncision, flow contained eamhed below average majority of banks Vegetative protection 120% of banks, is not Dovious bank sloughing w banks on 80-100%. charnel. Greater than covered by deposition, ability. Multiple thread subterranean flow.	
Riparian Buffers Tree stratum (db' with > 60% tree non-maintained u located within t	Assess both bank	nroughout read	ch; minimum	bank erosior	; located at to			I .	-	
Riparian Buffers Tree stratum (db' with > 60% tree non-maintained u located within t	Assess both bank	nroughout read	ch; minimum	bank erosior	; located at to			I .	-	2.1
Property of the stratum (doing t	Assess both bank	nk's 100 foot riparia			•	be of slope; s	ome mature	trees on left		
Riparian Buffers Tree stratum (dbi with > 60% tree non-maintained u located within t		Con	nditional Cate	<u> </u>	gh measurements	s of length & width	n may be accepta	able) NOTES>>		ı
Buffers with > 60% tree non-maintained u located within t	timal	Subo	ptimal	Mar	ginal	Po	oor			Ī
	> 3 inches) present canopy cover and a nderstory. Wetlands he riparian areas.	to 60% tree	cover and a	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non- maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with +30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non- maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
		High	Low	High	Low	High	Low			Ī
Condition , Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5]		İ
Delineate riparian areas along descriptors. Determine square footage for pelow. Enter the % Riparian Area and	each by measurin	ing or estimating ler	ngth and width. C	Calculators are pro		of % R	the sums Riparian	-		
% Riparian Area		88%					100%			ı
Right Bank Score >	0.75	0.5						01. (0	0	ı
% Riparian Areas	100%						100%	CI= (Sum % RA * :	0.53	С
Left Bank Score >	1.5							Lt Bank Cl >	1.50	1.0
3. INSTREAM HABITAT: undercut banks; root mats; SAV;				ody and leafy deb	ris; stable substrat	te; low embededn	ess; shade;	NOTES>>mu much leaf m	,	1
_			Condition	al Category					ool sequence	ì
Habitat/ Available Habitat elements	timal	Stable habitat eler nt present in 30-50% are adequate for	ements are typically % of the reach and or maintenance of lations.	Stable habitat ele present in 10-30% are adequate fo	ginal ments are typically 6 of the reach and r maintenance of ations.	Habitat elements	nstable. Habitat ally present in less			
Score	are typically present 50% of the reach.	1	.2	0	.9	0	.5	1		1.2

	St	ream In	npact A	ssessn	nent Fo	rm Pag	e 2		
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT Chesapeake R3 0208020802 2/5/2014 3								N/A
	L ALTERATION: Stream cross spoil piles, constrictions, livestock		Condition	al Category				NOTES>>st located at to along on-ra	e of slope
	Negligible	IVII	nor	IVIOC	erate	Se	vere		
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	parameter guidelines.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter (80% of banks sh	of reach is disrupted inel alterations listed guidelines AND/OR nored with gabion, or cement.		
SCORE	1.5	1.3	1.1	0.9	0.7	C).5		
	REACH C	ONDITION I	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IIS REACH		
NOTE: The CIs and I	RCI should be rounded to 2 decimal places.	The CR should be rou	nded to a whole numb	oer.			THE REACH (CONDITION IN	DEX (RCI) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 3 looking downstream.



DESCRIBE PROPOSED IMPACT:	

		Stre		ied Stream M	lethodology f	or use in Virg	ginia	m 1)			
Project #		Project Name		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High I	Rise Bridge Cor	ridor Study	Chesapeake	R3	0208020802	2/5/2014	4	575	N/A	
	e(s) of Evaluat			e and Informa							
	ilson & Dave Kwa			Newton Cree							
I. Channel C	Condition: Asse	ess the cross-sec	tion of the stream		ondition (erosion, Conditional Catego						
	Opti	mal	Subo	ptimal	Mar	ginal	Po	oor	Sev	rere	
	Wallet .	المعلق المجلكو	The state of the s		1	5	all				
Channel Condition	Very little incision of 100% stable bar surface protection prominent (80-11 Stable point bars/ba present. Access floodplain or fully bankfull benches. and transverse ba sediment depositio	ks. Vegetative or natural rock, 10%). AND/OR nkfull benches are to their original developed wide Mid-channel bars, rs few. Transient	erosion or unprotect banks are stable (6) protection or natural 80%) AND/OR De contribute to stabilit low flow channels Stream likely has benches, or newly d along portions of the sediment covers 10	ew areas of active ed banks. Majority of 0-80%). Vegetative rock prominent (60- positional features y. The bankfull and s are well defined. access to bankfull eveloped floodplains e reach. Transient 0-40% of the stream	Banks more stable th to lower bank slope present on 40-60% of protection on 40-60% may bevertical or unde of stream is covered I may be temporary, instability, Depositi stability, may be formir shaped channels hav		unstable. Likely to wic both banks are near v on 60-80% of banks. present on 20-40' insufficient to prevent 80% of the stream is Sediment is tempora and contributing to it shaped channels have	covered by sediment. ary/transient in nature, astability. AND/OR V- e vegetative protection of the banks and stable	incision, flow contair Streambed below average and any of the streamber of	stability. Severe led within the banks. erage rooting depth, vertical/undercut. on present on less s, is not preventing s bank sloughing	
	10% of t			tom.	features which co	ntribute to stability.			instability. Multiple and/or subte	e thread channels rranean flow.	CI
Score	3		2	.4		2	1	.6			2.0
	Opti			Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with >	Mar High Marginal: Non-maintained, dense herbaceous vegetation with	areas lacking shrub	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively	Low Poor: Impervious surfaces, mine spoil lands,	NOTES>>		
Riparian Buffers	with > 60% tree ca non-maintained und located within the	nopy cover and a erstory. Wetlands	to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	and free stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
			High	Low	High	Low	High	Low			
Condition Scores	1.	5	1.2	1.1	0.85	0.75	0.6	0.5			
lescriptors.	arian areas along e			•		•		the sums Riparian			
B. Enter the % F	Riparian Area and			the blocks below			Blocks e	equal 100			
Right Bank	% Riparian Area>	15% 1.5	85% 0.6					100%			
	30010 /	1.0	0.0						CI= (Sum % RA * S	cores*0.01)/2	
Left Bank	% Riparian Area>	30%	70%					100%	Rt Bank CI >	0.74	CI
	Score > M HABITAT: Va root mats; SAV; ril			es.		ris; stable substra	te; low embededn	ess; shade;	Lt Bank Cl > NOTES>>lar banks provid	ling some	0.77
	Opti	mal	Subo	ptimal ptimal	al Category Mar	ginal	Po	oor			
Instream									shade; leaf packs observed; few root mats; sandy banks/substrate		
Instream Habitat/ Available Cover	Habitat elements ar in greater than 50		present in 30-50% are adequate fo	ments are typically 6 of the reach and r maintenance of ations.	present in 10-30% are adequate fo	ments are typically 6 of the reach and r maintenance of ations.	lacking or are u elements are typic	s listed above are nstable. Habitat ally present in less of the reach.		rate	CI

	St	ream In	npact A	ssessm	nent Fo	rm Pag	e 2				
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor		
45612-001	VDOT		Chesapeake	R3	0208020802 2/5/2014 4 575 N/A						
	EL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, spoil piles, constrictions, livestock Conditional Category NOTES>>box culverts up- and down-stream; straight, very little										
	Negligible	Mir	nor	Mod	erate	Se	vere	sinuosity	-		
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter of 80% of banks sh	of reach is disrupted nel alterations listed guidelines AND/OR nored with gabion, or cement.				
SCORE	1.5	1.3	1.1	0.9	0.7	0).5				
	REACH C	ONDITION II	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH				
NOTE: The Cls and I	RCI should be rounded to 2 decimal places.	The CR should be rou	nded to a whole numb	oer.			THE REACH (CONDITION IN	DEX (RCI) >>		

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 4 looking upstream.



DES	CRIBE PROPOSED IMPACT:		
_			
L			

	S		nified Stream N	Methodology	for use in Virg	ginia	m 1)			
Project #	Class.				HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Brid	ge Corridor Study	Chesapeake	R3	0208020802	2/5/2014	5	1309	N/A	
	e(s) of Evaluator(s)		me and Inform							
	ilson & Dave Kwasniewsk		f Newton Cree							
i. Channei C	Condition: Assess the c		-	Conditional Catego	ory					
	Optimal	Sub	optimal	Mar	ginal	Po	oor	Sev	vere	
	The Wa	V		1				Doophi instead	(or excavated),	
Channel Condition	Very little incision or active er 100% stable banks. Vege surface protection or nature prominent (80-100%). AN Stable point bars/bankfull ber present. Access to their or floodplain or fully develope bankfull benches. Mid-chant and transverse bars few. Tr. sediment deposition covers le 10% of bottom.	sison; 80 erosion or unprot banks are stable protection or nativo/OCR 80%) AND/OR contribute to stal low flow chans I wide le bars, benches, or newl along portions of sediment covers	I, few areas of active cated banks. Majority of (60-80%). Vegetative ral rock prominent (60-bepositional features bility. The bankfull and tels are well defined. as access to bankfull by developed floodplains the reach. Transient 10-40% of the stream oottom.	Il Banks more stable the to lower bank slop present on 40-60% of protection on 40-60% may bevertical or undo of stream is covered may be temporary instability. Deposit stability, may be form shaped channels havon > 40% of the be	s than Severe or Poor. an Severe or Poor due so. Erosion may be both banks. Vegetative of banks. Streambanks ercut. AND/OR 40-60% by sediment. Sediment transient, contribute on that contribute to not present. AND/OR v- vegetative protection mks and depositional ontribute to stability.	unstable. Likely to wid both banks are near von 60-80% of banks. present on 20-40 insufficient to prevent 80% of the stream is Sediment is tempora and contributing to it shaped channels have is present on > 40% of	d. Vertically/laterally fen further. Majority of ertical. Erosion present Vegetative protection of other standards of the standard standards of the standard standards of the standard standards of the banks and stable solition is absent.	vertical/lateral in incision, flow contain streambed below as majority of banks Vegetative protect than 20% of bank erosion. Obvious present. Erosion 100%. AND/OR A Greater than 80% covered by deposi instability. Multipli	istability. Severe ned within the banks. vertage rooting depth, vertical/undercut. tion present on less s, is not preventing is bank sloughing r/aw banks on 80-Aggrading channel. 6 of stream bed is tion, contributing to e thread channels rranean flow.	CI
Saara	3		2.4		2	1	.6		1	
Score	3	1	2.4		_	'	.0		•	2.0
Riparian Buffers	Tree stratum (dbh > 3 inches) with > 60% tree canopy cove non-maintained understory. No located within the riparian :	r and a /etlands lreas. to 60% tree canopy cover a containing both herbaceous an shrub layers or	with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory.	layer or a tree layer (dbh > 3 inches) present,	areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree	mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active			
		non-maintaine understory.	a Recent cutover	with <30% tree canopy cover.	stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained	area, recently seeded and stabilized, or other comparable condition.	feed lots, trails, or other comparable conditions.			
		understory.	d (dense vegetation).	canopy cover.	inches) present, with <30% tree canopy cover with maintained understory.	seeded and stabilized, or other comparable condition.	other comparable conditions.			
Condition	1.5		a (dense		inches) present, with <30% tree canopy cover with maintained	seeded and stabilized, or other comparable	other comparable			
Scores 1. Delineate ripa descriptors. 2. Determine squelow.	1.5 arian areas along each stre quare footage for each by m	High 1.2 am bank into Condition easuring or estimating	a Recent cutover (dense vegetation). Low 1.1 Categories and Codength and width. Code	High 0.85 Ondition Scores us	inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	other comparable conditions.			
Scores Delineate ripalescriptors. Determine squelow. Enter the % F	arian areas along each stre quare footage for each by m Riparian Area and Score for % Riparian Area> 100	High 1.2 am bank into Condition easuring or estimating each riparian category	a Recent cutover (dense vegetation). Low 1.1 Categories and Codength and width. Code	High 0.85 Ondition Scores us	inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low 0.5 the sums			
Scores Delineate ripa escriptors. Determine squelow. Enter the % F	arian areas along each stre quare footage for each by m Riparian Area and Score for	High 1.2 am bank into Condition easuring or estimating each riparian category	a Recent cutover (dense vegetation). Low 1.1 Categories and Codength and width. Code	High 0.85 Ondition Scores us	inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low 0.5 the sums Riparian	Cl= (Sum % R4 * ° c	Scores*0.011/2	
Scores Delineate ripa escriptors. Determine squelow. Enter the % R Right Bank	arian areas along each stre quare footage for each by m Riparian Area and Score for % Riparian Area> 100	munderstory. High 1.2 The bank into Condition The ba	a Recent cutover (dense vegetation). Low 1.1 Categories and Codength and width. Code	High 0.85 Ondition Scores us	inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low 0.5 the sums Riparian	CI= (Sum % RA * \$ Rt Bank CI >	Scores*0.01)/2 1.50	CI
Scores Delineate ripa escriptors. Determine squelow. Enter the % F	arian areas along each stre quare footage for each by m Riparian Area and Score for % Riparian Area> 100 Score > 1.	m bank into Condition easuring or estimating each riparian category	a Recent cutover (dense vegetation). Low 1.1 Categories and Codength and width. Code	High 0.85 Ondition Scores us	inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low 0.5 the sums Riparian equal 100 100%			CI 1.50
Scores 1. Delineate ripadescriptors. 2. Determine squebelow. 3. Enter the % R Right Bank Left Bank 3. INSTREAM undercut banks; Instream Habitat/ Available	arian areas along each stre puare footage for each by m Riparian Area and Score for Riparian Area 100 Score > 1. Riparian Area> 100 Score > 1. Riparian Area> 100 Score > 1. HABITAT: Varied sub root mats; SAV; riffle poole Optimal Habitat elements are typically	understory. High 1.2 Important bank into Condition Passuring or estimating Passuring or esti	a Recent curover (dense vegetation). Low 1.1 Categories and Codength and width. Codength and width. Codength and depths; woures. Condition coptimal	High 0.85 Indition Scores us Calculators are provided and leafy debut all Category Stable habitat elepresent in 10-30'	inches) present, with withe-gow/ tree canopy cover with maintained understory. Low 0.75 ing the povided for you ris; stable substrated the substrate	seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	Low 0.5 the sums Riparian equal 100 100% 100%	Rt Bank Cl > Lt Bank Cl > NOTES>>rou present; log in stream; le observed; sl provided by line both ban	1.50 1.50 or mats s observed af packs hade trees that hks; minimal	
Scores I. Delineate rips descriptors. 2. Determine squelow. 3. Enter the % R Right Bank Left Bank Left Bank Instream Habitat/	arian areas along each stre quare footage for each by m Riparian Area and Score for % Riparian Area> 100 Score > 1. % Riparian Area> 100 Score > 1. W HABITAT: Varied sub root mats; SAV; riffle poole Optimal	understory. High 1.2 Im bank into Condition easuring or estimating each riparian category 1% 5 strate sizes, water velo complexes, stable feal Stable habitat or present in 30-t each. Stable habitat or present in 30-t each.	Low 1.1 Categories and Collength and width. Collength and width. Collength and depths; woures. Condition poptimal	High 0.85 Calculators are provided and Category Stable habitat elepresent in 10-30° are adequate for are adequate for are adequate for a few and a few an	inches) present, with <a>20% tree canopy cover with maintained understory. Low 0.75 ing the evided for you ris; stable substrated in the s	seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6 Habitat elements lacking or are u elements are typic elements.	other comparable conditions. Low 0.5 the sums Riparian equal 100 100% 100% ess; shade;	Rt Bank Cl > Lt Bank Cl > NOTES>>roo present; log in stream; le observed; sl provided by	1.50 1.50 or mats s observed af packs hade trees that hks; minimal	

	St	ream In	npact A	ssessm	nent Fo	rm Page	e 2		
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT Chesapeake R3 0208020802 2/5/2014 5								N/A
	L ALTERATION: Stream cross spoil piles, constrictions, livestock		Condition	al Category				NOTES>>bo up- and dow	
	Negligible	Negligible Minor Moderate Severe							
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter of 80% of banks sh	of reach is disrupted nel alterations listed juidelines AND/OR lored with gabion, r cement.		
SCORE	1.5	1.3	1.1	0.9	0.7	0	.5		
	REACH C	ONDITION I	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH		
NOTE: The Cls and I	RCI should be rounded to 2 decimal places.	The CR should be rou	nded to a whole numb	er.			THE REACH (CONDITION IN	DEX (RCI) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 5 looking downstream.



DESCRIBE PROPOSED IMPACT:	

		Stre	Unit	fied Stream N	lethodology f	Form	ginia	m 1)			
Project #		Project Name		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High	Rise Bridge Cor	ridor Study	Chesapeake	R3	0208020802	2/5/2014	6	210	N/A	
Nam	e(s) of Evalua	tor(s)	Stream Nam	e and Informa	ation						
Glenn W	ilson & Dave Kwa	asniewski	Tributary of	Newton Cree	k						
1. Channel (Condition: Asse	ess the cross-sec	ction of the stream		ondition (erosion,						
	Opti	imal	Subo	ptimal	Mar	ginal	Po	oor	Sev	vere	
	The state of the s	مولا المحالا	Service Control of the Control of th			5			Deephylagicad	(or excavated),	
Channel Condition	Very little incision o 100% stable ban surface protection prominent (80-11 Stable point bar/sb- present. Access floodplain or fully bankfull benches. and transverse be sediment depositio 10% of	n or natural rock, 00%). AND/OR ankfull benches are s to their original of developed wide Mid-channel bars, ars few. Transient on covers less than	erosion or unprotect banks are stable (6) protection or natural 80%) AND/OR De contribute to stabilit low flow channels Stream likely has benches, or newly d along portions of the sediment covers 10	ew areas of active ed banks. Majority of 0-80%). Vegetative I rock prominent (60- positional features ty. The bankfull and a rew well defined. access to bankfull eveloped floodplains be reach. Transient 0-40% of the stream tom.	Banks more stable th to lower bank slope present on 40-60% of protection on 40-60% may bevertical or unde of stream is covered I may be temporary instability. Depositi stability, may be formi shaped channels hav on > 40% of the ba	s than Severe or Poor. an Severe or Poor due s. Erosion may be both banks. Vegetative of banks. Streambanks strcut. AND/OR 40-60% by sediment. Sediment transient, contribute on that contribute to pig/resent. AND/OR V- e vegetative protection nks and depositional ntribute to stability.	unstable. Likely to wic both banks are near v on 60-80% of banks. present on 20-40' insufficient to prevent 80% of the stream is Sediment is tempora and contributing to it shaped channels have	% of banks, and is erosion. AND/OR 60-covered by sediment. ny/transient in nature, stability. AND/OR V- e vegetative protection of the banks and stable	vertical/lateral in incision, flow contain Streambed below aver amajority of banks Vegetative protect than 20% of banks erosion. Obviou present. Erosion. 100%. AND/OR AGreater than 80% covered by deposi instability. Multipli	stability. Severe led within the banks. lerage rooting depth, vertical/undercut. ion present on less s, is not preventing s bank sloughing fraw banks on 80- ggrading channel. s of stream bed is ion, contributing to	CI
Score	3	3	2	.4		2	1	.6		1	2.0
NOTES>>			<u> </u>						ea that form a		2.0
2. RIPARIAI	Opti	Assess both bank	Con	ditional Cate	gory	ginal	Po	n may be accepta	NOTES>>		
2. RIPARIAI Riparian Buffers	Opti	imal > 3 inches) present, anopy cover and a derstory. Wetlands	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree	ditional Cate	gory	Ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with < 30% tree canopy cover with maintained			NOTES>>		
Riparian	Option Tree stratum (dbh > with > 60% tree canon-maintained uncompaintained u	imal > 3 inches) present, anopy cover and a derstory. Wetlands	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	ditional Cate ptimal Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	NOTES>>		
Riparian Buffers	Option Tree stratum (dbh > with > 60% tree canon-maintained uncompaintained u	imal 3 inches) present, anopy cover and a derstory. Wetlands e riparian areas.	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained	ditional Cate ptimal Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory, Recent cutover (dense	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree	Ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with < 30% tree canopy cover with maintained	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable	NOTES>>		
Riparian Buffers Condition Scores 1. Delineate ripa descriptors. 2. Determine so below.	Tree stratum (dbh > with > 60% tree ca non-maintained unc located within the	imal 3 inches) present, anopy cover and a derstory. Wetlands e riparian areas. 5 each stream bank each by measuring	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	NOTES>>		
Riparian Buffers Condition Scores 1. Delineate ripa descriptors. 2. Determine so below.	Tree stratum (dbh > with > 60% tree or non-maintained und located within the located with	imal 3 inches) present, anopy cover and a derstory. Wetlands e riparian areas. 5 each stream bankeach by measuring ach by measuring Score for each ri	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	NOTES>>		
Riparian Buffers Condition Scores 1. Delineate ripa descriptors. 2. Determine so below.	Tree stratum (dbh > with > 60% tree ca non-maintained unc located within the	imal 3 inches) present, anopy cover and a derstory. Wetlands e riparian areas. 5 each stream bank each by measuring	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	NOTES>>		
Riparian Buffers Condition Scores Delineate ripadescriptors. Determine scoelow. Reference of the condition of the conditio	Tree stratum (dbh > with > 60% tree canon-maintained uncolocated within the located withi	imal 3 inches) present, anopy cover and a derstory. Wetlands e riparian areas. 5 ach stream bank ach by measuring the stream bank ach by	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	NOTES>>		Ci.
Riparian Buffers Condition Scores Delineate ripa descriptors. Delta between the score of the s	Tree stratum (dbh > with > 60% tree or non-maintained und located within the located with	imal 3 inches) present, anopy cover and a derstory. Wetlands e riparian areas. 5 each stream bani each by measuring score for each ri	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	NOTES>>	scores*0.01)/2 1.50 1.50	CI 1.50
Condition Scores 1. Delineate rip descriptors. 2. Determine scoelow. 3. Enter the % F Right Bank Left Bank 3. INSTREAR	Tree stratum (dbh > with > 60% tree canon-maintained uncolocated within the located withi	imal 3 inches) present, anopy cover and a derstory. Wetlands e riparian areas. 5 ach stream bank ach by measuring ach by measuring 100% 1.5 100% 1.5 arried substrate significant areas.	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler parian category in	ditional Cate ptimal Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co oright and width. Co the blocks below y and depths; wodes.	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 adiculators are production of the condition of the conditi	ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	CI= (Sum % RA * S Rt Bank CI > Lt Bank CI > NOTES>>ma provide shad	1.50 1.50 ture trees de and root	Cl 1.50
Condition Scores 1. Delineate rip descriptors. 2. Determine so below. 3. Enter the % F Right Bank Left Bank 3. INSTREAR	Tree stratum (dbh > with > 60% tree cc non-maintained und located within the located with	imal 3 inches) present, anopy cover and a derstory. Wetlands e riparian areas. 5 ach stream bank ach by measuring ach by measuring 100% 1.5 100% 1.5 arried substrate significant areas.	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler parian category in parian category in catego	ditional Cate ptimal Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co oright and width. Co the blocks below y and depths; wodes.	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with https://doi.org/10.100/j.nc/a/ High 0.85 Indition Scores us calculators are production of the production	ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated anon-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	CI= (Sum % RA * S Rt Bank CI > Lt Bank CI >	1.50 1.50 ture trees de and root dercuts;	
Condition Scores 1. Delineate ripa descriptors. 2. Determine sc below. 3. Enter the % f Right Bank Left Bank 3. INSTREAI undercut banks;	Tree stratum (dbh > with > 60% tree cc non-maintained und located within the located with	imal 3 inches) present, anopy cover and a derstory. Wetlands e riparian areas. 5 each stream baniach by measurin Score for each ri 100% 1.5 100% 1.5 aried substrate si iffle poole completimal	Con Subo High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler parian category in zes, water velocity exes, stable featur Subo Stable habitat elee present in 30-50% are adequate fo	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth and width. Congth and depths; worders. y and depths; worders. Conditional	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 adculators are production of the control of the	ginal Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian riqual 100 100% 100%	Cl= (Sum % RA * S Rt Bank Cl > Lt Bank Cl > NOTES>>ma provide shad mats; no und	1.50 1.50 ture trees de and root dercuts; nave fallen am; large	

	St	ream In	npact A	ssessn	nent Fo	rm Page	e 2		
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT Chesapeake R3 0208020802 2/5/2014 6					210	N/A		
	ALTERATION: Stream cross poil piles, constrictions, livestock	ings, riprap, conc		concrete blocks, s	traightening of ch	nannel, channeliza	ation,	NOTES>>co embankmen BMP upstre	t leading to
	Negligible	Mi	nor		erate	Se	vere		downstream:
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter of 80% of banks sh riprap, o	reater than 80% of reach is disrupted y any of the channel alterations listed n the parameter guidelines AND/OR		upper each; effluent tfall pipes parking lot e scour pool
SCORE	1.5	1.3	1.1	0.9	0.7	0	.5		
	REACH C	ONDITION I	NDEX and S	STREAM CO	NDITION UN	ITS FOR TH	IS REACH		
NOTE: The Cls and R	CI should be rounded to 2 decimal places.	The CR should be rou	nded to a whole numb	per.			THE REACH	CONDITION IN	DEX (RCI) >>
							RC	I= (Sum of all C	l's)/5

COMPENSATION REQUIREMENT (CR) >> N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 6 looking upstream.



DESCRIBE PROPOSED IMPACT:	

	Stre		ied Stream N	lethodology f	Form for use in Virg s intermittent or	ginia	m 1)			
Project #	Project Nam		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Bridge Co		Chesapeake	R3	0208020802	2/5/2014	7	524	N/A	
	e(s) of Evaluator(s) ilson & Dave Kwasniewski	Stream Nam								
	Condition: Assess the cross-se		Newton Cree		aggradation)					
i. Citatillei C	Optimal			Conditional Catego		D	oor	Sou	/ere	
		- Sus		1	S S			1	5	
Channel Condition	Very little incision or active erosion; 8 100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches an present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars and transverse bars few. Transient sediment deposition covers less than 10% of bottom.	orosion or unprotect banks are stable (6) protection or natural 80%) AND/OR De contribute to stabilit low flow channels Stream likely has benches, or newly dalong portions of it sediment covers 10.	ew areas of active ed banks. Majority of >80%). Vegetative rock prominent (60- positional features y. The bankfull and s are well defined. access to bankfull eveloped floodplains the reach. Transient -40% of the stream tom.	Banks more stable th to lower bank slope present on 40-60% of protection on 40-60% of protection on 40-60% may bevertical or unde of stream is covered I may be temporary instability. Depositist ability, may be forming shaped channels have on > 40% of the ba	s than Severe or Poor. an Severe or Poor due so. Erosion may be both banks. Vegetative of banks. Streambanks crut. AND/OR 4-0-60% by sediment. Sediment ifransient, contribute on that contribute to on that contribute to on that contribute protection nks and depositional ntribute to stability.	unstable. Likely to wid both banks are near von 60-80% of banks. present on 20-40 insufficient to prevent 80% of the stream is Sediment is tempora and contributing to it shaped channels have is present on > 40% of	d. Vertically/laterally den further. Majority of ertical. Erosion present Vegetative protection % of banks, and is terosion. AND/OR 60-covered by sediment. any/transient in nature, ristability. AND/OR V-e vegetative protection of the banks and stable sition is absent.	vertical/lateral in incision, flow contair Streambed below av majority of banks Vegetative protect than 20% of banks erosion. Obviou. present. Erosion 100%. AND/OR A Greater than 80% covered by deposit instability. Multipli	vertical/undercut. ion present on less s, is not preventing s bank sloughing	CI
Score	3	2	.4		2	1	.6	 	1	2.0
NOTES>>	Vo	getation on to	n of banks: k	oth banks lir	and with trans	ı little under	outting obser	nuod.		
Riparian Buffers	Tree stratum (dbh > 3 inches) presen with > 60% tree canopy cover and a non-maintained understory. Wetland	to 60% tree	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum,	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively	Low Poor: Impervious surfaces, mine spoil lands,			
Duileis	located within the riparian areas.	containing both herbaceous and shrub layers or a non-maintained understory.	maintained understory. Recent cutover (dense vegetation).	layer (dbh > 3 inches) present, with <30% tree canopy cover.	hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Dullets	located within the riparian areas.	containing both herbaceous and shrub layers or a non-maintained	understory. Recent cutover (dense	layer (dbh > 3 inches) present, with <30% tree	ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained	sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	denuded surfaces, row crops, active feed lots, trails, or other comparable			
Condition Scores	located within the riparian areas.	containing both herbaceous and shrub layers or a non-maintained understory.	understory. Recent cutover (dense vegetation).	layer (dbh > 3 inches) present, with <30% tree canopy cover.	ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Condition Scores 1. Delineate ripa descriptors. 2. Determine squelow.		containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ak into Condition Cong or estimating length or stimulating length	understory, Recent cutover (dense vegetation). Low 1.1 attegories and Co	layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us alculators are pro-	ponds, open water. If present, tree stratum (dbh > 3 inches) present, with < 30% tree canopy cover with maintained understory. Low 0.75	sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Condition Scores 1. Delineate ripa descriptors. 2. Determine sq pelow. 3. Enter the % R	1.5 arian areas along each stream bar	containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ak into Condition Cong or estimating length or stimulating length	understory, Recent cutover (dense vegetation). Low 1.1 attegories and Co	layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us alculators are pro-	ponds, open water. If present, tree stratum (dbh > 3 inches) present, with < 30% tree canopy cover with maintained understory. Low 0.75	sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Condition Scores 1. Delineate ripa descriptors. 2. Determine squelow.	1.5 arian areas along each stream barquare footage for each by measuri	containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ik into Condition Cong or estimating ler	understory, Recent cutover (dense vegetation). Low 1.1 attegories and Co	layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us alculators are pro-	ponds, open water. If present, tree stratum (dbh > 3 inches) present, with < 30% tree canopy cover with maintained understory. Low 0.75	sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian	CL (Sum W Date)	Sporter to 0.41 in	
Condition Scores 1. Delineate ripa descriptors. 2. Determine squelow. 3. Enter the % R Right Bank	1.5 arian areas along each stream bar quare footage for each by measuri Riparian Area and Score for each % Riparian Area 75%	containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ik into Condition Cong or estimating ler	understory, Recent cutover (dense vegetation). Low 1.1 attegories and Co	layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us alculators are pro-	ponds, open water. If present, tree stratum (dbh > 3 inches) present, with < 30% tree canopy cover with maintained understory. Low 0.75	sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian	Cl= (Sum % RA * S Rt Bank Cl >	Scores*0.01)/2 1.25	CI
Condition Scores Delineate ripa lescriptors. Determine squelow. Better the % R	arian areas along each stream barquare footage for each by measuring Riparian Area and Score for each % Riparian Area> 75% Score > 1.5	containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ik into Condition Cong or estimating ler iparian category in 25% 0.5	understory, Recent cutover (dense vegetation). Low 1.1 attegories and Co	layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us alculators are pro-	ponds, open water. If present, tree stratum (dbh > 3 inches) present, with < 30% tree canopy cover with maintained understory. Low 0.75	sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%			CI 1.03
Condition Scores 1. Delineate ripa descriptors. 2. Determine squelow. 3. Enter the % R Right Bank Left Bank 3. INSTREAN	1.5 arian areas along each stream barguare footage for each by measuring Riparian Area and Score for each % Riparian Area> % Riparian Area> 1.5 % Riparian Area> 30%	containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ik into Condition Cong or estimating ler inparian category in 25% 0.5 70% 0.5	understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth and depths; wooes.	layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us alculators are pro	ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	Rt Bank CI > Lt Bank CI > NOTES>>min	1.25 0.80 nimal leaf ed; shade	
Condition Scores 1. Delineate ripa descriptors. 2. Determine sq below. 3. Enter the % R Right Bank Left Bank 3. INSTREAN undercut banks;	1.5 arian areas along each stream barguare footage for each by measuring the stream Area and Score for each Riparian Area and Score for each Riparian Area 75% Score > 1.5 Riparian Area 30% Score > 1.5 M HABITAT: Varied substrate	containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 It into Condition Cong or estimating ler cong or e	understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth and depths; woo es. Conditional	layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us alculators are production of the control of the	ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	Rt Bank CI > Lt Bank CI > NOTES>>min pack observed from trees al	1.25 0.80 nimal leaf ed; shade ong both	
Condition Scores 1. Delineate ripa descriptors. 2. Determine sq below. 3. Enter the % R Right Bank Left Bank 3. INSTREAN	arian areas along each stream barquare footage for each by measuring the stream has the stream Area and Score for each with the stream Area and Score or each with the stream Area and Score or each with the stream Area and Score or stream Area and Score or 1.5 What is the stream and the stream Area and Score or the stream Area and Sc	containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ik into Condition C and the strength of	understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth and depths; wooes.	layer (dbh > 3 inches) present, with <a0% 0.85="" 10-30%="" a="" adequate="" al="" alculators="" and="" are="" canopy="" category="" control="" cover.="" deb="" ele="" for="" habitat="" high="" in="" inches="" indition="" leafy="" o<="" of="" present="" processed="" scores="" stable="" td="" the="" tree="" us=""><td>ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 Ing the wided for you</td><td>sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6</td><td>denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100% 100%</td><td>Rt Bank CI > Lt Bank CI > NOTES>>min</td><td>1.25 0.80 nimal leaf ed; shade ong both</td><td></td></a0%>	ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 Ing the wided for you	sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100% 100%	Rt Bank CI > Lt Bank CI > NOTES>>min	1.25 0.80 nimal leaf ed; shade ong both	

	St	ream In	npact A	ssessm	ent Fo	rm Page	e 2		
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT		Chesapeake	R3	0208020802	2/5/2014	7	524	N/A
	L ALTERATION: Stream cross spoil piles, constrictions, livestock	ings, riprap, concr		concrete blocks, s	traightening of ch	annel, channeliza	ation,	NOTES>>str channel par roadway	•
	Negligible	Mir	nor		erate	Sev	vere	Toauway	
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chang in the parameter g 80% of banks sh	of reach is disrupted nel alterations listed juidelines AND/OR lored with gabion, r cement.		
SCORE	1.5	1.3	1.1	0.9	0.7	0	.5		
	REACH C	ONDITION II	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH		
NOTE: The Cls and F	RCI should be rounded to 2 decimal places.	The CR should be rour	nded to a whole numb	er.			THE REACH (CONDITION IN	DEX (RCI) >>

RCI= (Sum of all Cl's)/5

COMPENSATION REQUIREMENT (CR) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 7 looking upstream.



DESCRIBE PROPOSED IMPACT:	
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333	-

	Str		fied Stream N	lethodology 1	Form for use in Virg	ginia	m 1)			
Project #	Project Nar		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Bridge C	orridor Study	Chesapeake	R3	0208020802	2/6/2014	8	630	N/A	
	e(s) of Evaluator(s)		e and Inform							
Glenn W	ilson & Dave Kwasniewski	Tributary of	Goose Creek							
1. Channel (Condition: Assess the cross-s	ection of the stream		ondition (erosion, Conditional Catego						
	Optimal	Subo	ptimal		ginal	Po	oor	Sev	ere	
Channel Condition	Very little incision or active erosion; 100% stable banks. Vegetative surface protection or natural rock,	erosion or unprotect banks are stable (6	ew areas of active (ed banks. Majority of 0-80%). Vegetative I rock prominent (60-	Banks more stable the to lower bank slop	s than Severe or Poor. aan Severe or Poor due ss. Erosion may be	unstable. Likely to wid both banks are near v			stability. Severe ed within the banks. erage rooting depth,	
	prominent (80-100%). AND/OR Stable point bars/bankfull benches a present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bar and transverse bars few. Transien sediment deposition covers less tha 10% of bottom.	80%) AND/OR De contribute to stabili low flow channel Stream likely has benches, or newly c along portions of the sediment covers 10	positional features ty. The bankfull and s are well defined, access to bankfull leveloped floodplains he reach. Transient 0-40% of the stream tom.	protection on 40-60% may bevertical or und of stream is covered may be temporary instability. Deposit stability, may be formi shaped channels hav on > 40% of the ba	both banks. Vegetative of banks. Streambanks ercut. AND/OR 40-60% by sediment. Sediment vitransient, contribute ion that contribute to ng/present. AND/OR V- e vegetative protection inks and depositional intribute to stability.			majority of banks vertical/undercut. Vegetative protection present on less than 20% of banks, is not preventing erosion. Obvious bank sloughing present. Erosion/raw banks on 80- 100%. AND/OR Aggrading channel.		CI
Score	3	2	2.4		2	1	.6	1		3.0
NOTES>>		Stable banks; li	ittle erosion;	no mid-point	bars; stream	reach can ac	cess floodpla	ain		
Riparian Buffers	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas.	a to 60% tree	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dib + 3 inches) present, with <30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated anon-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
		High	Low	High	Low	High	Low			
Condition Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5			
Delineate ripa descriptors. Determine so below.	arian areas along each stream ba quare footage for each by measur Riparian Area and Score for each	ing or estimating le	ngth and width. C	Calculators are pro	•	of % F	the sums Riparian			
Right Bank	% Riparian Area> 100%						100%			
	Score > 1.5							CI= (Sum % RA * S	cores*0.01\/2	
Left Dani	% Riparian Area> 100%						100%	Rt Bank CI >	1.50	CI
Left Bank	Score > 1.5							Lt Bank CI >	1.50	1.50
	M HABITAT: Varied substrate	sizes, water velocit	y and depths; woo	ody and leafy deb	ris; stable substra	te; low embededr	ess; shade;	NOTES>>riffl sequence ob	•	
undercut banks;	root mats; SAV; riffle poole com	olexes, stable featur		al Category Mar	ginal	Po	oor	shade provid along both b	ed by trees anks; root	
undercut banks;	root mats; SAV; riffle poole comp	Stable featur Subo Stable habitat ele present in 30-50% are adequate fo popul	Condition	Stable habitat ele present in 10-30' are adequate fo	ginal ments are typically of the reach and or maintenance of lations.	Habitat elements lacking or are u elements are typic than 10% o	s listed above are nstable. Habitat ally present in less of the reach.	shade provid	ed by trees anks; root ed; leaf red;	<u>CI</u> 1.50

Stream Impact Assessment Form Page 2 Applicant Cowardin Class Data Point SAR length Project # Impact Factor 45612-001 VDOT Chesapeake 0208020802 2/5/2014 4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, NOTES>>box culvert embankments, spoil piles, constrictions, livestock upstream Conditional Category Moderate Minor Negligible Severe 40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered. 60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines If stream has been channelized, normal stable stream meander pattern has not recovered. 20-40% of the stream reach is Less than 20% of Channel Greater than 80% of reach is disrupte the stream reach is disrupted by any of the channel alterations listed in Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized. disrupted by any by any of the channel alterations listed in the parameter guidelines AND/OR 80% of banks shored with gabion, Alteration of the channel alterations listed i the parameter the parameter riprap, or cement. guidelines. guidelines. SCORE 1.5 1.3 1.1 0.9 0.7 0.5 1.30 REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >>

RCI= (Sum of all Cl's)/5

1.46

COMPENSATION REQUIREMENT (CR) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 8 looking downstream.



DESCRIBE PROPOSED IMPACT:	
	•
	-

	Str		ied Stream N	lethodology i	Form for use in Virg s intermittent or	ginia	m 1)			
Project #	Project Nar		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Bridge C	orridor Study	Chesapeake	R3	0208020802	2/6/2014	9	2335	N/A	
	e(s) of Evaluator(s)		e and Inform							
	ilson & Dave Kwasniewski		Goose Creek							
1. Channel (Condition: Assess the cross-s	ection of the stream		ondition (erosion, conditional Catego						
	Optimal	Subo	ptimal	Mar	ginal	Po	oor	Sev	rere	
	The same state of the same sta	Tu.		1		all	The state of the s	Deeply incised	(or excavated).	
Channel Condition	Very little incision or active erosion; 100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches a present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bar and transverse bars few. Transien sediment deposition covers less the 10% of bottom.	erosion or unprotect banks are stable (6) protection or natural 80%) AND/OR De contribute to stabilit low flow channels Stream likely has benches, or newly dalong portions of the contribute to stability of the contrib	positional features y. The bankfull and s are well defined. access to bankfull eveloped floodplains he reach. Transient 0-40% of the stream	Banks more stable the to lower bank slope present on 40-60% of protection on 40-60% of protection on 40-60% may bevertical or under of stream is covered may be temporary instability. Depositist stability, may be formishaped channels hav on > 40% of the ba	is than Severe or Poor. an Severe or Poor due so. Erosion may be both banks. Vegetative of banks. Streambanks ercut. AND/OR 40-60% by sediment. Sediment firansient, contribute on that contribute to not present. AND/OR V- e vegetative protection nks and depositional intribute to stability.	unstable. Likely to with both banks are near von 60-80% of banks. present on 20-40 insufficient to prevent 80% of the stream is Sediment is temporand contributing to is shaped channels have is present on > 40% of	d. Vertically/laterally len further. Majority of ertical. Erosion present Vegetative protection % of banks, and is e-rosion. AND/OR 60- covered by sediment. any/transient in nature, nstability. AND/OR V- evegetative protection in the banks and stable sition is absent.	vertical/lateral in: incision, flow contain incision, flow incision incision, flow incision, f	stability. Severe led within the banks, erage rooting depth, vertical/undercut. on present on less i, is not preventing s bank sloughing raw banks on 80- ggrading channel. of stream bed is ion, contributing to	
								and/or subter	rranean flow.	CI
Score	3	2	.4		2	1	.6	1	l	2.0
2. RIPARIAI	N BUFFERS: Assess both ba	Con	ditional Cate	gory				NOTES>>		
Riparian Buffers	Optimal Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) nt, present, with 30% a to 60% tree	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable			
		non-maintained understory.	(dense vegetation).	canopy cover.	inches) present, with <30% tree canopy cover with maintained understory.	stabilized, or other comparable condition.	conditions.			
Condition		non-maintained			with <30% tree canopy cover with maintained	comparable				
Condition Scores	1.5	non-maintained understory.	vegetation).	canopy cover.	with <30% tree canopy cover with maintained understory.	comparable condition.	conditions.			
Scores 1. Delineate ripa descriptors. 2. Determine so below.	arian areas along each stream ba	non-maintained understory. High 1.2 ank into Condition Coring or estimating ler	Low 1.1 ategories and Co	High 0.85 Indition Scores us	with <30% tree canopy cover with maintained understory. Low 0.75	comparable condition. High 0.6 Ensure of % I	Low 0.5 the sums			
Scores 1. Delineate ripa descriptors. 2. Determine so below. 3. Enter the % F	arian areas along each stream ba quare footage for each by measu Riparian Area and Score for each	non-maintained understory. High 1.2 ank into Condition C ring or estimating ler	Low 1.1 ategories and Co	High 0.85 Indition Scores us	with <30% tree canopy cover with maintained understory. Low 0.75	comparable condition. High 0.6 Ensure of % I	Low 0.5			
Scores 1. Delineate ripa descriptors. 2. Determine sobelow.	arian areas along each stream ba quare footage for each by measu Riparian Area and Score for each	non-maintained understory. High 1.2 ank into Condition Coring or estimating ler	Low 1.1 ategories and Co	High 0.85 Indition Scores us	with <30% tree canopy cover with maintained understory. Low 0.75	comparable condition. High 0.6 Ensure of % I	Low 0.5 the sums Riparian equal 100			
Scores 1. Delineate ripa descriptors. 2. Determine so below. 3. Enter the % F	arian areas along each stream by quare footage for each by measur Riparian Area and Score for each % Riparian Area> 75% Score > 1.5	non-maintained understory. High 1.2 ank into Condition C ring or estimating ler riparian category in 25%	Low 1.1 ategories and Co	High 0.85 Indition Scores us	with <30% tree canopy cover with maintained understory. Low 0.75	comparable condition. High 0.6 Ensure of % I	Low 0.5 the sums Riparian equal 100 100%	Cl= (Sum % RA * S Rt Bank Cl >		CI
Scores 1. Delineate ripa descriptors. 2. Determine so below. 3. Enter the % F	arian areas along each stream be quare footage for each by measure Riparian Area and Score for each % Riparian Area> 75%	non-maintained understory. High 1.2 ank into Condition C ring or estimating ler riparian category in 25%	Low 1.1 ategories and Co	High 0.85 Indition Scores us	with <30% tree canopy cover with maintained understory. Low 0.75	comparable condition. High 0.6 Ensure of % I	Low 0.5 the sums Riparian equal 100	,	1.25 1.50	CI 1.38
Scores 1. Delineate ripidescriptors. 2. Determine scibelow. 3. Enter the % F Right Bank Left Bank 3. INSTREA	arian areas along each stream beguare footage for each by measure. Riparian Area and Score for each Riparian Area = 75% Score > 1.5 % Riparian Area> 100%	non-maintained understory. High 1.2 ank into Condition C ring or estimating ler riparian category in 25% 0.5	Low 1.1 ategories and Congth and width. Congth and width. Congth and depths; woodes.	High 0.85 Indition Scores us salculators are pro	with <30% tree canopy cover with maintained understory. Low 0.75 ing the wided for you	ecomparable condition. High 0.6 Ensure of % If Blocks 6	Low 0.5 the sums Riparian equal 100 100%	Rt Bank CI > Lt Bank CI > NOTES>>roo woody and le	1.25 1.50 ot mats with eafy debris	
Scores 1. Delineate ripa descriptors. 2. Determine so below. 3. Enter the % F Right Bank Left Bank 3. INSTREAI undercut banks;	arian areas along each stream beguare footage for each by measure Riparian Area and Score for each % Riparian Area 75% Score > 1.5 % Riparian Area> 100% Score > 1.5 M HABITAT: Varied substrate	non-maintained understory. High 1.2 Ank into Condition Coring or estimating ler riparian category in 25% 0.5 Sizes, water velocity blexes, stable feature.	Low 1.1 ategories and Congth and width. Congth and width. Congth and depths; woodes.	High 0.85 Indition Scores us calculators are production.	with <30% tree canopy cover with maintained understory. Low 0.75 ing the wided for you	comparable condition. High 0.6 Ensure of % F Blocks 6	Low 0.5 the sums Riparian equal 100 100%	Rt Bank CI > Lt Bank CI > NOTES>>roc	1.25 1.50 ot mats with eafy debris nade from	
Scores 1. Delineate ripa descriptors. 2. Determine so below. 3. Enter the % F Right Bank Left Bank 3. INSTREA! undercut banks;	arian areas along each stream be quare footage for each by measure footage for each by measure footage for each by measure footage for each % Riparian Area> 75% Score > 1.5 % Riparian Area> 100% Score > 1.5 M HABITAT: Varied substrate root mats; SAV; riffle poole comparison.	non-maintained understory. High 1.2 Ank into Condition C cring or estimating ler riparian category in 25% 0.5 Sizes, water velocity olexes, stable feature stable feature that the present in 30-50%	Low 1.1 ategories and Congth and width. Congth and depths; worders. Conditionary time to the congth and width. Conditionary time to the conditionary time time to the conditionary time time time time time time time time	High 0.85 Indition Scores us calculators are production of the production of the production of the present in 10-30 are adequate for a sedequate for a sedequ	with -30% tree canopy cover with maintained understory. Low 0.75 ing the evided for you	e; low embededr	Low 0.5 the sums Riparian equal 100 100% 100%	Rt Bank CI > Lt Bank CI > NOTES>>roo woody and le observed; sh	1.25 1.50 ot mats with eafy debris nade from nks;	

	St	ream In	npact A	ssessm	ent Fo	rm Pag	e 2		
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT		Chesapeake	R3	0208020802	2/5/2014	9	2335	N/A
	ALTERATION: Stream cross poil piles, constrictions, livestock	ings, riprap, conci		concrete blocks, s	traightening of ch	annel, channeliza	ation,	NOTES>>cu upstream ur	llvert nder roadway
	Negligible	Mir	nor	Mod	erate	Se	vere		
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	If stream has been	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter of 80% of banks sh	of reach is disrupted inel alterations listed guidelines AND/OR nored with gabion, or cement.		
SCORE	1.5	1.3	1.1	0.9	0.7	0).5		
	REACH C	ONDITION II	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH		
NOTE: The CIs and R	CI should be rounded to 2 decimal places.	The CR should be roun	nded to a whole numb	per.			THE REACH (CONDITION IN	DEX (RCI) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 9 looking downstream.



DESCRIBE PROPOSED IMPACT:	

	Str		fied Stream N	Methodology 1	Form for use in Virg s intermittent or	ginia	m 1)			
Project #	Project Na		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Bridge (Corridor Study	Chesapeake	R3	0208020802	2/6/2014	10	870	N/A	
	e(s) of Evaluator(s)		e and Inform							
	ilson & Dave Kwasniewski		Goose Creek							
1. Channel C	Condition: Assess the cross-	_	(Conditional Catego	ry			1 _		
	Optimal	Subo	ptimal	Mar	ginal	Pe	oor	Sev	vere	
	The second	Tu.	No.	1		1	***			
Channel Condition	Very little incision or active erosion 100% stable banks. Vegetative surface protection or natural rock prominent (80-100%). AND/OR Stable point bars/bankfull benches present. Access to their origina floodplain or fully developed wid bankfull benches. Mid-channel ba and transverse bars few. Transier sediment deposition covers less the 10% of bottom.	erosion or unprotect banks are stable (6 protection or natura 80%) AND/OR Decreted on the stability of those contribute to stability of those contribute to stability of those contribute to stability of the stab	iew areas of active ted banks. Majority of 10-80%). Vegetative If rock prominent (60- positional features ity. The bankfull and s are well defined. a access to bankfull developed floodplains he reach. Transient 0-40% of the stream tom.	Banks more stable the to lower bank slope present on 40-60% of protection on 40-60% of protection on 40-60% may bevertical or under of stream is covered may be temporary instability. Depositist stability, may be form shaped channels hav on > 40% of the ba	s than Severe or Poor. As severe or Poor due so. Erossion may be both banks. Vegetative of banks. Streambanks ercut. AND/OR 40-60% by sediment. Sediment and transient, contribute on that contribute to on that contribute to mypresent. AND/OR Ve vegetative protection nks and depositional intribute to stability.	unstable. Likely to with both banks are near von 60-80% of banks. present on 20-40 insufficient to preven 80% of the stream is Sediment is temporand contributing to i shaped channels have is present on > 40% of	d. Vertically/laterally flen further. Majority of ertical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60-covered by sediment yrytransient in nature, stability. AND/OR V-vegetative protection of the banks and stable sition is absent.	vertical/lateral in incision, flow contain streambed below as majority of banks Vegetative protect than 20% of bank erosion. Obvious present. Erosion 100%. AND/OR A Greater than 80% covered by deposi instability. Multipli	I (or exavated), stability. Sewere ned within the banks, vertage rooting depth, vertical/undercut. tion present on less s, is not preventing is bank sloughing viraw banks on 80-Aggrading channel. & of stream bed is tion, contributing to le thread channels raranean flow.	CI
Saara	3	1 2	2.4		2	1	.6		1	
Score	3		4	1		'	.0		•	2.0
		High Suboptimal:	Low Suboptimal:							
Riparian Buffers	Tree stratum (dbh > 3 inches) press with > 60% tree canopy cover and non-maintained understory. Wetla located within the riparian areas	a to 60% tree nds canopy cover and	cover and a	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
	with > 60% tree canopy cover and non-maintained understory. Wetland	with tree stratum (dbh > 3 inches) present, with 30% to 60% tree das canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with square inches) present, with square inches) roceur with maintained understory.	mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Buffers	with > 60% tree canopy cover and non-maintained understory. Wetland	with tree stratum (dbh > 3 inches) at to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained	with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense	Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree	Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained	mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable			
Condition Scores 1. Delineate ripadescriptors. 2. Determine squelow.	with > 60% tree canopy cover and non-maintained understory. Wetlat located within the riparian areas	with tree stratum (dbh > 3 inches) present, with 30% to 60% tree das canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 ank into Condition Coring or estimating length	with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 categories and Coungth and width. Coungth	Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dib + 30 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Condition Scores Delineate ripa escriptors. Determine squescriptors. Enter the % R	with > 60% tree canopy cover and non-maintained understory. Wetla located within the riparian areas 1.5 arian areas along each stream b quare footage for each by measu. Riparian Area and Score for each was along to the control of the control o	with tree stratum (dbh > 3 inches) present, with 30% to 60% tree das canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 ank into Condition Coring or estimating length	with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 categories and Coungth and width. Coungth	Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dib + 30 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5			
Condition Scores I. Delineate ripa descriptors. 2. Determine squelow.	with > 60% tree canopy cover and non-maintained understory. Wetla located within the ripartan areas 1.5 arian areas along each stream b quare footage for each by measu.	with tree stratum (dbh > 3 inches) present, with 30% to 60% tree das canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 ank into Condition Coring or estimating length	with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 categories and Coungth and width. Coungth	Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dib + 30 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Impervious surfaces, mine spoil lands, denuded surfaces, cow crops, active feed lots, trails, or other comparable conditions. Low 0.5	Cl= (Sum % PA * °	Scores*0.011/2	
Condition Scores Delineate ripa descriptors. Determine squelow. Enter the % R Right Bank	with > 60% tree canopy cover and non-maintained understory. Wetla located within the riparian areas 1.5 arian areas along each stream b quare footage for each by measu. Riparian Area and Score for each was along to the control of the control o	with tree stratum (dbh > 3 inches) present, with 30% to 60% tree das canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 ank into Condition Coring or estimating length	with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 categories and Coungth and width. Coungth	Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dib + 30 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Impervious surfaces, mine spoil lands, denuded surfaces, cow crops, active feed lots, trails, or other comparable conditions. Low 0.5	CI= (Sum % RA * \$ Rt Bank CI >	Scores*0.01)/2	CI
Condition Scores Delineate ripa escriptors. Determine squescriptors. Enter the % R	with > 60% tree canopy cover and non-maintained understory. Wetla located within the riparian areas 1.5 arian areas along each stream beguare footage for each by measure footage for each by measure footage for each stream beguare footage for each by measure footage for each stream beguare for each s	with tree stratum (dbh > 3 inches) present, with 30% to 60% tree das opposed and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 ank into Condition C ring or estimating lei	with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 categories and Coungth and width. Coungth	Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dib + 30 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Impervious surfaces, mine spoil lands, denuded surfaces, cover consumer conditions. Low 0.5 Low 100%	`		CI 1.46
Condition Scores 1. Delineate ripa descriptors. 2. Determine squelow. 3. Enter the % R Right Bank Left Bank 3. INSTREAN undercut banks; Instream Habitat/ Available	with > 60% tree canopy cover and non-maintained understory. Wetlat located within the riparian areas 1.5 arian areas along each stream began areas along e	with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 ank into Condition Coring or estimating left of the present in 30-60 stable feature. Subo	with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 Categories and Co ngth and width. Co n the blocks below y and depths; wor res. Condition ptimal ments are typically % of the reach and	Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us calculators are production of the present, and the present of the present in 10-30% tree canopy cover.	Non-maintained, dense herbaceous vegetation, riparian areas lacking shrbaceous vegetation, riparian areas lacking shrbach and tree stratum, hay production, ponds, open water. If present, tree stratum (dibh >3 inches) present, with abc.ncbes/ present, tree stratum (dibh >3 inches) present, with abc.ncbes/ present, with abc.ncbes/ present, with abc.ncbes/ present, with abc.ncbes/ present stratum dibh >3 inches/ pres	mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	Impervious surfaces, mine spoil lands, denuded surfaces, con crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100% 100% s listed above are nstable. Habitat	Rt Bank CI > Lt Bank CI > NOTES>>fev with leafy de observed; si tree-lined ba pool sequen observed; so	1.50 1.41 W root mats ebris hade from links; riffle / lice ome	
Condition Scores 1. Delineate ripa descriptors. 2. Determine sq below. 3. Enter the % R Right Bank Left Bank 3. INSTREAN undercut banks;	with > 60% tree canopy cover and non-maintained understory. Wetla located within the riparian areas 1.5 1.5 arian areas along each stream be quare footage for each by measu. Riparian Area and Score for each stream be some some some some some some some som	with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 ank into Condition C tring or estimating left or inparian category in 10% 0.6 sizes, water velocit plexes, stable feature present in 30-50° are adequate for a riches and the stable plexes.	with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 Categories and Coungth and width. Coungth and width. Coungth and coungth a	Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Acalculators are processed and category Mar Stable habitat ele present in 10-30 are adequate for a feed of the category and a feed of the category.	Non-maintained, dense herbaceous vegetation, riparian areas lacking shrbaceous vegetation, riparian areas lacking shrbach and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh-3 inches) present, with -a30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	mowed, and maintained areas, nurseries; no-titil cropland; actived pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % If Blocks of the light	Impervious surfaces, mine spoil lands, denuded surfaces, con crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian Equal 100 100% 100%	Rt Bank CI > Lt Bank CI > NOTES>>fev with leafy de observed; sl tree-lined ba pool sequen	1.50 1.41 W root mats ebris hade from links; riffle / lice ome	

	St	ream In	npact A	ssessm	nent Fo	rm Page	e 2		
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT		Chesapeake	R3	0208020802	2/5/2014	10	870	N/A
	L ALTERATION: Stream cross spoil piles, constrictions, livestock	ings, riprap, conc		concrete blocks, s	traightening of ch	annel, channeliza	ition,	NOTES>>cu upstream ur	ilvert nder roadway
	Negligible	Mi	nor	Mod	erate	Sev	/ere		
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alternations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	80% of banks sh			
SCORE	1.5	1.3	1.1	0.9	0.7	0	.5		
	REACH C	ONDITION I	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH		
NOTE: The Cls and I	RCI should be rounded to 2 decimal places.	The CR should be rou	nded to a whole numb	er.			THE REACH	CONDITION IN	DEX (RCI) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 10 looking downstream.



DESCRIBE PROPOSED IMPACT:	

		Sire	Unit	ied Stream N	lethodology i	for use in Virg	•	m 1)			
Project #	F	Project Name		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High F	Rise Bridge Cor	ridor Study	Chesapeake	R3	0208020802	2/6/2014	11	800	N/A	
Name	e(s) of Evaluat	tor(s)	Stream Nam	e and Inform	ation						
Glenn W	ilson & Dave Kwa	sniewski	Tributary of	Goose Creek							
I. Channel C	Condition: Asse	ess the cross-sec	ction of the stream		ondition (erosion,						
	Optio	mal	Subo	ptimal	Mar	ginal	Po	oor	Sev	/ere	
	my make	معل محلکوه			1	5			Deenly incised	(or excavated),	
Channel Condition	Very little incision or 100% stable ban surface protection prominent (80-10 Stable point bars/ba present. Access floodplain or fully bankfull benches. I and transverse ban sediment deposition 10% of b	ks. Vegetative or natural rock, 10%). AND/OR nkfull benches are to their original developed wide Mid-channel bars, rs few. Transient overs less than	erosion or unprotect banks are stable (6) protection or natural 80%) AND/OR De contribute to stabilit low flow channels Stream likely has benches, or newly d along portions of the sediment covers 10	ew areas of active ed banks. Majority of 0-80%). Vegetative rock prominent (60- positional features y. The bankfull and a rew lell defined. access to bankfull eveloped floodplains to reach. Transient 0-40% of the stream tom.	Banks more stable th to lower bank slop present on 40-60% of protection on 40-60% may bevertical or unde of stream is covered may be temporary, instability. Depositi stability, may be formi shaped channels hav on > 40% of the ba	s than Severe or Poor. an Severe or Poor due so. Erosion may be both banks. Vegetative of banks. Streambanks ercut. AND/OR 40-60% by sediment. Sediment transient, contribute on that contribute to noppresent. AND/OR v- e vegetative protection nks and depositional intribute to stability.	unstable. Likely to wid both banks are near v on 60-80% of banks. present on 20-40 insufficient to prevent 80% of the stream is Sediment is tempora and contributing to it shaped channels have is present on > 40% of	d. Vertically/laterally len further. Majority of ertical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60- covered by sediment. ary/transient in nature, rstability. AND/OR V- e vegetative protection of the banks and stable sition is absent.	vertical/lateral in incision, flow contain Streambed below aver amajority of banks Vegetative protect than 20% of banks erosion. Obviou present. Erosion. 100%. AND/OR AGreater than 80% covered by deposi instability. Multipli	stability. Severe need within the banks. nerage rooting depth, vertical/undercut. ion present on less s, is not preventing s bank sloughing raw banks on 80-ggrading channel. 6 of stream bed is tion, contributing to	CI
Score	3		2	.4		2	1	.6		1	2.0
NOTES>>									eaf pack obse		
		mal		ptimal Low Suboptimal:	Mar	ginal Low Marginal:		oor	NOTES>>		
Riparian Buffers	Tree stratum (dbh > with > 60% tree can nor-maintained und located within the	3 inches) present, nopy cover and a erstory. Wetlands	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained	High Poor: Lawns, mowed, and maintained areas, nurseries: no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
	Tree stratum (dbh > with > 60% tree car	3 inches) present, nopy cover and a erstory. Wetlands	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Buffers	Tree stratum (dbh > with > 60% tree car	3 inches) present, nopy cover and a erstory. Wetlands riparian areas.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable			
Condition Scores 1. Delineate riptedescriptors. 2. Determine squelow.	Tree stratum (dbh > with > 60% tree car non-maintained und located within the	3 inches) present, nopy cover and a erstory. Wetlands riparian areas.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5			
Condition Scores 1. Delineate ripore descriptors. 2. Determine squelow.	Tree stratum (dbh > with > 60% tree can non-maintained und located within the	3 inches) present, nopy cover and a erstory. Wetlands riparian areas. 5 ach stream banl ach by measuring.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5			
Condition Scores 1. Delineate rips descriptors. 2. Determine squelow.	Tree stratum (dbh > with > 60% tree car non-maintained und located within the	3 inches) present, nopy cover and a erstory. Wetlands riparian areas.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5			
Condition Scores 1. Delineate rip: descriptors. 2. Determine squelow. 3. Enter the % F	Tree stratum (dbh > with > 60% tree car non-maintained und located within the located lo	3 inches) present, nopy cover and a erstory. Wetlands riparian areas. 5 ach stream bant ach by measuring to be cover for each riparian areas.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler parian category in	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100	CI= (Sum % RA * S		
Condition Scores Delineate ripz lescriptors. Determine squelow. Better the % F	Tree stratum (dbh > with > 60% tree car non-maintained und located within the located lo	3 inches) present, nopy cover and a erstory. Wetlands riparian areas. 5 ach stream bant ach by measuring 100% 1.5 50%	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler parian category in	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	CI= (Sum % RA * S Rt Bank CI >	1.50	<u>CI</u>
Condition Scores 1. Delineate ripa descriptors. 2. Determine squesorious. 3. Enter the % F. Right Bank Left Bank 3. INSTREAL	Tree stratum (dbh > with > 60% tree car non-maintained und located within the located lo	3 inches) present, nopy cover and a erstory. Wetlands riparian areas. 5 ach stream bant ach by measuring 100% 1.5 50% 1.5	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler parian category in 50% 0.6 Zes, water velocity	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co agth and width. Co the blocks below / and depths; woo es.	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us calculators are process.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	CI= (Sum % RA * S Rt Bank CI > Lt Bank CI > NOTES>>so mats and mu	1.50 1.05 me root uch woody	
Condition Scores 1. Delineate ripa descriptors. 2. Determine squescriptors. 3. Enter the % F. Right Bank Left Bank 3. INSTREAM	Tree stratum (dbh > with > 60% tree car nor-maintained und located within the located within the strain areas along e uare footage for ea Riparian Area and S % Riparian Area S Score > M HABITAT: Va	3 inches) present, nopy cover and a erstory. Wetlands riparian areas. 5 ach stream bank ach by measuring 100% 1.5 50% 1.5 tried substrate siftle poole complete.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 k into Condition C g or estimating ler parian category in 50% 0.6 zes, water velocity ixxes, stable featur	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co agth and width. Co the blocks below / and depths; woo es.	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us calculators are production of the producti	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	CI= (Sum % RA * S Rt Bank CI > Lt Bank CI > NOTES>>SO	1.50 1.05 me root uch woody bris	Cl 1.28
Condition Scores 1. Delineate ripa descriptors. 2. Determine squeedow. 3. Enter the % F Right Bank Left Bank 3. INSTREA!	Tree stratum (dbh > with > 60% tree car non-maintained und located within the located lo	3 inches) present, nopy cover and a erstory. Wetlands riparian areas. 5 5 ach stream bant ach by measuring 100% 1.5 50% 1.5 tried substrate si file poole comple mal	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 K into Condition C g or estimating ler parian category in 50% 0.6 zes, water velocity exes, stable featur Subo Stable habitat eler present in 30-50% are adequate fo popul	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 attegories and Co oright and width. Co the blocks below / and depths; wodes. Conditions	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us calculators are processed at Category Stable habitat elepresent in 10-30% are adequate for popul	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100% 100%	Cl= (Sum % RA * \$ Rt Bank Cl > Lt Bank Cl > NOTES>>so mats and mu and leafy del	1.50 1.05 me root uch woody bris nade from a; riffle / ce	

	St	ream In	npact A	ssessm	ent Fo	rm Page	e 2			
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor	
45612-001	VDOT		Chesapeake	R3	0208020802	2/5/2014	11	800	N/A	
4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, upstream and Conditional Category Conditional Category										
	Negligible Mi		nor Mode		erate S		vere	roadways		
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chang in the parameter of 80% of banks sh	of reach is disrupted nel alterations listed juidelines AND/OR ored with gabion, r cement.			
SCORE	1.5	1.3	1.1	0.9	0.7	0	.5			
	REACH C	ONDITION II	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH			
NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.						THE REACH CONDITION INDEX (RCI) >>				

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 11 looking upstream.



DES	SCRIBE PROPOSED IN	MPACT:			
			 ·		

	Str		fied Stream N	lethodology i	Form for use in Virg s intermittent or	ginia	m 1)			
Project #	Project Nan		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Bridge Co	orridor Study	Chesapeake	R3	0208020802	2/6/2014	12	345	N/A	
	e(s) of Evaluator(s)		e and Inform							
	/ilson & Dave Kwasniewski		Goose Creek							
1. Channel C	Condition: Assess the cross-se		(Conditional Catego	ry					
	Optimal	Subo	ptimal	Mar	ginal	Po	oor	Sev	vere	
	The same of the sa	Slightly inclosed 6		1		al al		Deeply incised	(or excavated),	
Channel Condition	Very little incision or active erosion; the 100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches a present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars and transverse bars few. Transient sediment deposition covers less tha 10% of bottom.	erosion or unprotect banks are stable (6f protection or natural 80%) AND/OR De contribute to stabilit low filow channels Stream likely has benches, or newly d along portions of the sediment covers 1C	ew areas of active ed banks. Majority of 0-80%). Vegetative I rock prominent (60-positional features by. The bankfull and s are well defined, access to bankfull eveloped floodplains he reach. Transient 0-40% of the stream tom.	Banks more stable the to lower bank slope present on 40-60% of protection on 40-60% of protection on 40-60% may bevertical or under of stream is covered may be temporary instability. Depositist stability, may be formity shaped channels have on > 40% of the banks.	s han Severe or Poor. an Severe or Poor due ss. Erosion may be both banks. Vegetative of banks. Streambanks ercut. AND/OR 40-60% by sediment. Sediment on that contribute to not present. AND/OR V- e vegetative protection nks and depositional mitbute to stability.	unstable. Likely to with both banks are near von 60-80% of banks. present on 20-40 insufficient to preven 80% of the stream is Sediment is temporand contributing to i shaped channels have is present on > 40% of	d. Vertically/laterally den further. Majority of ertical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60-covered by sediment. anyltransient in rature, nstability. AND/OR V-e vegetative protection of the banks and stable sistion is absent.	vertical/lateral in- incision, flow contain Streambed below av majority of banks Vegetative protecti than 20% of banks erosion. Obvious present. Erosion/ 100%. AND/OR A Greater than 80% covered by deposit instability. Multiple	ned within the banks. serage rooting depth, vertical/undercut. son present on less s, is not preventing s bank sloughing raw banks on 80- ggrading channel, s of stream bed is sion, contributing to	
								and/or subter	rranean flow.	CI
Score	3	2	.4		2	1	.6	1	1	2.0
Riparian Buffers	Optimal Tree stratum (dbh > 3 inches) preser with > 60% tree canopy cover and on-maintained understory. Wetland located within the riparan areas.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% a to 60% tree ds canopy cover and	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained		Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area. recently	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active	NOTES>>		
	located within the riparian areas.	containing both herbaceous and	understory.	inches) present,						
		shrub layers or a non-maintained understory.	Recent cutover (dense vegetation).	with <30% tree canopy cover.	stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	seeded and stabilized, or other comparable condition.	feed lots, trails, or other comparable conditions.			
Condition Scores	1.5	shrub layers or a non-maintained	(dense		inches) present, with <30% tree canopy cover with maintained	seeded and stabilized, or other comparable	other comparable			
Scores 1. Delineate ripa descriptors. 2. Determine so below.	arian areas along each stream ba quare footage for each by measuri Riparian Area and Score for each % Riparian Area> 100%	shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coing or estimating len	(dense vegetation). Low 1.1 ategories and Congth and width. Con	High 0.85 Indition Scores us	inches) present, with <a href="https://www.ncs.ncs.ncs.ncs.ncs.ncs.ncs.ncs.ncs.ncs</td><td>seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I</td><td>other comparable conditions.</td><td></td><td></td><td></td></tr><tr><td>Scores 1. Delineate ripa descriptors. 2. Determine so below. 3. Enter the % F</td><td>arian areas along each stream ba
quare footage for each by measuri
Riparian Area and Score for each</td><td>shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coing or estimating len</td><td>(dense vegetation). Low 1.1 ategories and Congth and width. Con</td><td>High 0.85 Indition Scores us</td><td>inches) present, with <a href=" https:="" td="" www.ncs.ncs.ncs.ncs.ncs.ncs.ncs.ncs.ncs.ncs<=""><td>seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I</td><td>Low 0.5 the sums Riparian</td><td>CI= (Sum % RA * S</td><td>scores*0.01)/2</td><td></td>	seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Low 0.5 the sums Riparian	CI= (Sum % RA * S	scores*0.01)/2	
Scores 1. Delineate ripa descriptors. 2. Determine so below. 3. Enter the % F	arian areas along each stream ba quare footage for each by measure Riparian Area and Score for each % Riparian Area> 100% Score > 1.5 % Riparian Area> 20%	shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coing or estimating ler riparian category in 80%	(dense vegetation). Low 1.1 ategories and Congth and width. Con	High 0.85 Indition Scores us	inches) present, with					

	St	ream In	npact A	ssessm	nent Fo	rm Page	e 2		
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT	Chesapeake	R3	0208020802	2/5/2014	12	345	N/A	
	ALTERATION: Stream cross poil piles, constrictions, livestock	ings, riprap, conci		concrete blocks, s	traightening of ch	annel, channeliza	ation,	NOTES>>str adjacent to exhibits ver	roadway and
	Negligible	Mir	nor		erate	Sev	vere	sinuosity	y iitti e
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.		by any of the change in the parameter of 80% of banks sh	of reach is disrupted nel alterations listed guidelines AND/OR lored with gabion, r cement.	·	
SCORE	1.5	1.3	1.1	0.9	0.7	0	.5		
	REACH C	ONDITION II	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH		
				·	·		THE DEACH	CONDITION IN	DEV (DCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >> 0.94

RCI= (Sum of all CI's)/5 COMPENSATION REQUIREMENT (CR) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 12 looking upstream.



DESCRIBE PROPOSED IMPACT:	
	_

	- Oti	Uni	fied Stream N	lethodology 1	Form for use in Virgos intermittent or		m 1)			
Project #	Project Nar		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Bridge C	orridor Study	Chesapeake	R3	0208020802	2/6/2014	13	1039	N/A	
	e(s) of Evaluator(s)		e and Inform							
Glenn W	/ilson & Dave Kwasniewski	Tributary of	Goose Creek							
1. Channel (Condition: Assess the cross-s	ection of the stream		ondition (erosion, Conditional Catego						
	Optimal	Subo	ptimal		ginal	Po	oor	Sev	rere	
	Very little incision or active erosion;		ew areas of active	Often incised, but les	s than Severe or Poor.	Overwidened/incise	ed. Vertically/laterally	Deeply incised vertical/lateral in		
Channel Condition	100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches a present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bar and transverse bars few. Transien sediment deposition covers less that 10% of bottom.	banks are stable (6 protection or natura 80%) AND/OR De contribute to stabili low flow channel Stream likely has benches, or newly calong portions of the sediment covers 10 sediment co	ied banks. Majority of -0-80%). Vegetative I rock prominent (60- positional features by. The bankfull and s are well defined. access to bankfull leveloped floodplains he reach. Transient 0-40% of the stream tom.	Banks more stable the to lower bank slop present on 40-60% of protection on 40-60% of protection on 40-60% may bevertical or undo of stream is covered may be temporary instability. Deposit stability, may be form shaped channels hav on > 40% of the be	an Severe or Poor due so. Erosion may be both banks. Vegetative of barks. Streambanks grout. AND/OR 40-60% by sediment. Sediment transient, contribute on that contribute to hat contribute to vegetative protection nks and depositional intribute to stability.	unstable. Likely to with both banks are near von 60-80% of banks, present on 20-40 insufficient to prevent 80% of the stream is Sediment is temporand contributing to is shaped channels have is present on > 40% of the stream is present on > 40%	den further. Majority of rertical. Erosion present Vegetative protection % of banks, and is te rosion. AND/OR 60- covered by sediment. any/transient in nature, ristability. AND/OR V- e vegetative protection of the banks and stable sistion is absent.	incision, flow contain Streambed below aw majority of banks: Vegetative protectii than 20% of banks erosion. Obvious present. Erosion/ 100%. AND/OR A, Greater than 80% covered by depositi instability. Multiple and/or subter	ied within the banks, ereard proting depth, vertical/undercut. on present on less is, is not preventing is bank sloughing raw banks on 80-ggrading channel. of stream bed is ion, contributing to thread channels	CI
Score	3	2	2.4		2	1	.6	1	1	2.4
NOTES>>	Stream is locate	I.		ı			-	ı		2.7
	Optimal	Subo	ptimal	Mar	ginal		oor	NOTES>>		
Riparian Buffers	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparlian areas.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) nt, present, with 30% to 60% tree	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 3 0% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with < 30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	NUTES>>		
•	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan	High Suboptimal: Riparian areas with tree stratum (Ich) = 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable	NUTES>>		
•	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	NUTES>>		
Condition Scores 1. Delineate ript descriptors. 2. Determine so below.	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas.	High Suboptimal: Riparian areas with tree stratum (dibh > 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition C	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	NUTES>>		
Condition Scores 1. Delineate rips descriptors. 2. Determine so below. 3. Enter the % F	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream baquare footage for each by measur	High Suboptimal: Riparian areas with tree stratum (dibh > 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition C	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	NUTES>>		
Condition Scores 1. Delineate ripadescriptors. 2. Determine sobelow.	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparlan areas. 1.5 arian areas along each stream be quare footage for each by measur	High Suboptimal: Riparian areas with tree stratum (dibh > 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition C	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5			
Condition Scores 1. Delineate rips descriptors. 2. Determine so below. 3. Enter the % F	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream be quare footage for each by measur Riparian Area and Score for each % Riparian Area 100% Score > 1.5	High Suboptimal: Riparian areas with tree stratum (dibh > 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition C	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100	CI= (Sum % RA * S		נו
Condition Scores 1. Delineate rips descriptors. 2. Determine scoelow. 3. Enter the % F	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparlan areas. 1.5 arian areas along each stream be quare footage for each by measur Riparian Area and Score for each % Riparian Area> 100%	High Suboptimal: Riparian areas with tree stratum (dibh > 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition C	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5		1.50	<u>CI</u>
Condition Scores 1. Delineate ripidescriptors. 2. Determine schelow. 3. Enter the % F Right Bank Left Bank 3. INSTREAI undercut banks;	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream baquare footage for each by measure. Riparian Area and Score for each % Riparian Area and Score for each % Score > 1.5 % Riparian Area 100% Score > 1.5 M HABITAT: Varied substrate; root mats; SAV; riffle poole comp	High Suboptimal Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition C ing or estimating ler riparian category in sizes, water velocit plexes, stable featur	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopic over and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co oright and width. Co the blocks below y and depths; wor es. Conditions	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Addition Scores us calculators are production of the production of the condition of the production of the producti	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks 6	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100% 100%	CI= (Sum % RA * S Rt Bank CI > Lt Bank Ci > NOTES>> sor and leafy det shade from p	1.50 1.50 me woody oris; some partially	
Condition Scores 1. Delineate ripidescriptors. 2. Determine sobelow. 3. Enter the % F Right Bank Left Bank 3. INSTREAI	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream be quare footage for each by measure. Riparian Area and Score for each % Riparian Area and Score 1.5 % Riparian Area 100% Score > 1.5 M HABITAT: Varied substrate	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition C ing or estimating ler riparian category in sizes, water velocit plexes, stable featur Subo Stable habitat ele present in 30-50° are adequate fo popul	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Co oright and width. Co the blocks below y and depths; wodes.	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us calculators are produced to the control of t	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % if Blocks if Blocks if Habitat element lacking or are u elements are typic than 10% if	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	Cl= (Sum % RA * S Rt Bank Cl > Lt Bank Cl > NOTES>>sor and leafy dek	1.50 1.50 me woody oris; some oartially a and vegetation nks; some nks and	

	St	ream In	npact A	ssessm	ent Fo	rm Pag	e 2		
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT		Chesapeake	R3	0208020802	2/5/2014	13	1039	N/A
	L ALTERATION: Stream cross poil piles, constrictions, livestock	ings, riprap, conc		concrete blocks, s	traightening of ch	annel, channeliza	ation,	NOTES>>str through culv downstream	vert on
	Negligible	Mi	nor	Mod	erate	Se	vere		
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alternations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter of 80% of banks sh	of reach is disrupted inel alterations listed guidelines AND/OR nored with gabion, or cement.		
SCORE	1.5	1.3	1.1	0.9	0.7	0).5		
	REACH C	ONDITION I	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH		
NOTE: The Cls and I	RCI should be rounded to 2 decimal places.	The CR should be rou	nded to a whole numb	er.			THE REACH	CONDITION IN	DEX (RCI) >>

RCI= (Sum of all Cl's)/5

COMPENSATION REQUIREMENT (CR) >> N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 13 looking downstream.



DESCRIBE PROPOSED IMPACT:	

		Stre	Unif	ied Stream M	lethodology i	Form for use in Virg	ginia	m 1)			
Project #	Proje	ect Name		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise B	Bridge Cor	ridor Study	Chesapeake	R3	0208020802	2/7/2014	14	1527	N/A	
	e(s) of Evaluator(s)		Stream Name		ation						
	/ilson & Dave Kwasniew		Tributary of	•							
1. Channel (Condition: Assess the	e cross-sec	tion of the stream		ondition (erosion, conditional Catego						
	Optimal		Subo	ptimal	Mar	ginal	Po	oor	Sev	ere	
	The same of the sa	t			1			shift and the sh	Deeply incised	(or excavated),	
Channel Condition	Very little incision or active 100% stable banks. Ve surface protection or nat prominent (80-100%). Yes table point bars/bankfull by present. Access to their floodplain or fully develo bankfull benches. Mid-chand transverse bars few. sediment deposition cover 10% of bottom.	egetative cural rock, AND/OR benches are r original oped wide annel bars, Transient rs less than	contribute to stability low flow channels Stream likely has benches, or newly de	ed banks. Majority of 0-80%). Vegetative rock prominent (60-positional features y. The bankfull and a rew ell defined. access to bankfull eveloped floodplains the reach. Transient 1-40% of the stream	Banks more stable the to lower bank slope present on 40-60% of protection on 40-60% of protection on 40-60% may bevertical or under of stream is covered may be temporary instability. Depositist stability, may be formishaped channels hav on > 40% of the ba	is than Severe or Poor. an Severe or Poor due so. Erosion may be both banks. Vegetative of banks. Streambanks ercut. AND/OR 40-60% by sediment. Sediment firansient, contribute on that contribute to not present. AND/OR V- e vegetative protection nks and depositional intribute to stability.	unstable. Likely to wid both banks are near von 60-80% of banks. present on 20-40 insufficient to prevent 80% of the stream is Sediment is tempora and contributing to it shaped channels have is present on > 40% of	d. Vertically/laterally len further. Majority of ertical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60- covered by sediment any/transient in nature, nstability. AND/OR V- e vegetative protection of the banks and stable sistion is absent.	vertical/lateral in: incision, flow contain incision, flow contain Streambed below av majority of banks Vegetative protecti than 20% of banks erosion. Obvious present. Erosion/. 100%. AND/OR A Greater than 80% covered by deposit instability. Multiple	stability. Severe ed within the banks, erage rooting depth, vertical/undercut. on present on less is not preventing bank sloughing raw banks on 80- ggrading channel. of stream bed is on, contributing to	
									and/or subter		CI
Score	3		2	.4		2	1	.6	1		2.4
2. RIPARIAI	N BUFFERS: Assess Optimal	both bank	Con	n areas along the ditional Cate	gory	igh measurement		n may be accepta	NOTES>>		
Riparian Buffers	Tree stratum (dbh > 3 inch with > 60% tree canopy or non-maintained understory located within the riparia	over and a	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with < 30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
			High	Low	High	Low	High	Low]		
Condition Scores	1.5		1.2	1.1	0.85	0.75	0.6	0.5			
descriptors.	arian areas along each st		g or estimating len	gth and width. C	alculators are pro		of % F	the sums Riparian			
below.	Riparian Area and Score	for each rin	parian category in					equal 100		I	
below. 3. Enter the % F	Riparian Area and Score	for each rip	earian category in 85%	the blocks below			Biooko	100%			
below.	% Riparian Area>			the blocks below			Biodic		01. (0	10000	
pelow. 3. Enter the % F Right Bank	% Riparian Area> 1 Score >	15% 1.5	85% 0.6	THE BIOCKS BEIOW			Blooks		CI= (Sum % RA * S	cores*0.01)/2 0.74	CI
pelow. 3. Enter the % F	% Riparian Area> Score > % Riparian Area>	15%	85%	are blocks below			Blooks (100%			CI 0.69
below. 3. Enter the % F Right Bank Left Bank 3. INSTREA	% Riparian Area> Score > % Riparian Area> Score > M HABITAT: Varied si root mats; SAV; riffle poor	15% 1.5 5% 1.5	85% 0.6 95% 0.6 zes, water velocity xes, stable feature	v and depths; woo		ris; stable substra	te; low embededr	100% 100%	Rt Bank CI >	0.74 0.65 v root mats	
below. 3. Enter the % F Right Bank Left Bank 3. INSTREA	% Riparian Area> Score > % Riparian Area> Score > M HABITAT: Varied si	15% 1.5 5% 1.5 ubstrate size ole complex	85% 0.6 95% 0.6 2es, water velocity xes, stable feature Subol Stable habitat eler present in 30-50% are adequate for popula	v and depths; woo es. Conditiona ptimal ments are typically 6 of the reach and or maintenance of	ody and leafy deb al Category Mar Stable habitat ele present in 10-30° are adequate fo popul	ginal ments are typically % of the reach and r maintenance of ations.	Po Habitat element lacking or are u elements are typic than 10% c	100%	Rt Bank CI > Lt Bank CI > NOTES>>few and leafy del	0.74 0.65 r root mats oris ome shade r forested the banks; banks ome riffle /	

	St	ream In	npact A	ssessm	ent Fo	rm Page	e 2					
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor			
45612-001	VDOT		Chesapeake	R3	0208020802	2/5/2014	14	1527 N/A				
	L ALTERATION: Stream cross spoil piles, constrictions, livestock		Condition	al Category				NOTES>>str through culv roadways; s	vert under ome banks			
	Negligible	Mii	nor	Mod	erate	Se	vere	along reside				
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter of 80% of banks sh	of reach is disrupted nel alterations listed guidelines AND/OR nored with gabion, r cement.					
SCORE	1.5	1.3	1.1	0.9	0.7	0	.5					
	REACH C	ONDITION I	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH					
VOTE: The Cls and R	RCI should be rounded to 2 decimal places.	The CR should be rour	nded to a whole numb	er.			THE REACH (CONDITION INI	DEX (RCI) >>			

RCI= (Sum of all Cl's)/5

COMPENSATION REQUIREMENT (CR) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 14 looking downstream.



DESCRIBE PROPOSED IMPACT:	
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	Str		fied Stream N	lethodology i	Form for use in Virgons intermittent or	ginia	m 1)			
Project #	Project Nar		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Bridge C		Chesapeake	R3	0208020802	4/22/2014	15	921	N/A	
	e(s) of Evaluator(s)		e and Inform							
	ilson & Dave Kwasniewski		Goose Creek							
1. Channel (Condition: Assess the cross-s		(Conditional Catego	ory					
	Optimal	Subo	ptimal	Mar	ginal	Po	oor	Sev	rere	
	The Mark	Clintonia		1				Deeply incised	(or excavated),	
Channel Condition	Very little incision or active erosion; 100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches i present. Access to their original floodplain or fully developed with bankfull benches. Mid-channel bar and transverse bars few. Transien sediment deposition covers less that 10% of bottom.	erosion or unprotect banks are stable (6) protection or natural 80%) AND/OR De contribute to stabilit low flow channel: Stream likely has, benches, or newly dalong portions of the sediment covers 10 ft.	ew areas of active ed banks. Majority of 0-80%). Vegetative I rock prominent (60- positional features ty. The bankfull and s are well defined. access to bankfull leveloped floodplains er each. Transient 0-40% of the stream tom.	Banks more stable the to lower bank slope present on 40-60% of protection on 40-60% of protection on 40-60% may bevertical or under of stream is covered may be temporary instability. Depositist stability, may be formishaped channels hav on > 40% of the ba	s than Severe or Poor. an Severe or Poor due ss. Erosion may be both banks. Vegetative of banks. Streambanks ercut. AND/OR 40-60% by sediment. Sediment fransient, contribute on that contribute to on plyresent. AND/OR V- e vegetative protection nks and depositional intribute to stability.	unstable. Likely to wid both banks are near von 60-80% of banks. present on 20-40 insufficient to prevent 80% of the stream is Sediment is tempora and contributing to it shaped channels have is present on > 40% of	d. Vertically/laterally den further. Majority of ertical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60-covered by sediment. ary/transient in nature, rastability. AND/OR Vevegetative protection of the banks and stable ssition is absent.	vertical/lateral in- incision, flow contain Streambed below av majority of banks Vegetative protecti than 20% of banks erosion. Obvious present. Erosion/ 100%. AND/OR A Greater than 80% covered by deposit instability. Multiple	ned within the banks. erage rooting depth, vertical/undercut. on present on less is, is not preventing is bank sloughing raw banks on 80- ggrading channel. of stream bed is ion, contributing to thread channels	
					2			and/or subter		CI
Score	3		.4		2	1	.6	1		2.0
Riparian Buffers	Tree stratum (dbh > 3 inches) prese with > 60% tree canopy cover afron-maintained understory. Wetlan located within the riparian areas.	to 60% tree	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
					maintained understory.	condition.				
		High	Low	High	maintained	condition. High	Low			
Condition Scores	1.5	High 1.2	Low 1.1	High 0.85	maintained understory.		Low 0.5			
Scores 1. Delineate ripa descriptors. 2. Determine sobelow.	1.5 arian areas along each stream ba	1.2 nk into Condition C ing or estimating ler	1.1 ategories and Co	0.85 Indition Scores us	maintained understory. Low 0.75	High 0.6 Ensure of % F				
Scores 1. Delineate ripa descriptors. 2. Determine so below. 3. Enter the % F	arian areas along each stream ba	1.2 nk into Condition C ing or estimating ler	1.1 ategories and Co	0.85 Indition Scores us	maintained understory. Low 0.75	High 0.6 Ensure of % F	0.5 the sums			
Scores 1. Delineate ripa descriptors. 2. Determine so below.	arian areas along each stream ba quare footage for each by measu Riparian Area and Score for each	nk into Condition Cing or estimating ler	1.1 ategories and Co	0.85 Indition Scores us	maintained understory. Low 0.75	High 0.6 Ensure of % F	0.5 the sums Riparian			
Scores 1. Delineate ripa descriptors. 2. Determine so below. 3. Enter the % F	arian areas along each stream be quare footage for each by measure Riparian Area and Score for each % Riparian Area> 50%	nk into Condition C ing or estimating ler riparian category in 50%	1.1 ategories and Co	0.85 Indition Scores us	maintained understory. Low 0.75	High 0.6 Ensure of % F	0.5 the sums Riparian	Cl≔ (Sum % RA * S Rt Bank Cl >	cores*0.01)/2	CI
Scores 1. Delineate ripalescriptors. 2. Determine sopelow. 3. Enter the % F	arian areas along each stream by quare footage for each by measure. Riparian Area and Score for each % Riparian Area > 50% Score > 1.5	nk into Condition Coing or estimating ler riparian category in 50% 0.5	1.1 ategories and Co	0.85 Indition Scores us	maintained understory. Low 0.75	High 0.6 Ensure of % F	0.5 the sums Riparian equal 100 100%			CI 0.88
Scores 1. Delineate ripa descriptors. 2. Determine so below. 3. Enter the % F Right Bank Left Bank 3. INSTREAT undercut banks;	arian areas along each stream be quare footage for each by measure footage for each by measure footage for each by measure footage for each % Riparian Area	nk into Condition C ing or estimating ler riparian category in 50% 0.5 25% 1.5 sizes, water velocity elexes, stable featur	ategories and Congth and width. Congth and width. Congth and depths; worders.	ndition Scores us calculators are produced.	maintained understory. Low 0.75 ing the ovided for you ris; stable substra	High 0.6 Ensure of % F Blocks 6	0.5 the sums Riparian equal 100 100% 100%	Rt Bank CI > Lt Bank CI > NOTES>>hig sediment de minimal riffle	1.00 0.75 h amount of position, e pool	
Scores 1. Delineate ripolescriptors. 2. Determine sobelow. 3. Enter the % F Right Bank Left Bank 3. INSTREAR	arian areas along each stream beguare footage for each by measure. Riparian Area and Score for each Riparian Area = 50% Score > 1.5 Riparian Area> 75% Score > 0.5 M HABITAT: Varied substrate	nk into Condition C ing or estimating ler riparian category in 50% 0.5 25% 1.5 sizes, water velocity elexes, stable featur Subo Stable habitat eler tresent in 30-50% are adequate fo popul	1.1 ategories and Co ngth and width. C the blocks below y and depths; wores.	ondition Scores us calculators are production. and Category Mar Stable habitat ele present in 10-30° are adequate for popul	Low 0.75 ing the vided for you	High 0.6 Ensure of % F Blocks 6 Ele; low embededr Habitat element lacking or are u elements are typic than 10% c	0.5 the sums Riparian equal 100 100%	Rt Bank CI > Lt Bank CI > NOTES>>hig sediment de	1.00 0.75 th amount of position, pool ome woody	

	St	ream In	npact A	ssessn	nent Fo	rm Pag	e 2					
Project #	Applicant		Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor			
45612-001	VDOT		Chesapeake	R3	0208020802	2/5/2014	15	921 N/A				921 N/A
	L ALTERATION: Stream cross		Condition	al Category				NOTES>>di channel loc I-64 and priv	ated betweer			
	Negligible	IVII	nor	IVIOC	erate	Se	vere	•				
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	parameter guidelines.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter (80% of banks sh	of reach is disrupted nel alterations listed guidelines AND/OR nored with gabion, or cement.					
SCORE	1.5	1.3	1.1	0.9	0.7	0).5					
	REACH C	ONDITION I	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH					
NOTE: The Cls and F	RCI should be rounded to 2 decimal places.	The CR should be rou	nded to a whole numb	per.			THE REACH (CONDITION IN	DEX (RCI) >>			

RCI= (Sum of all Cl's)/5

COMPENSATION REQUIREMENT (CR) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 15 looking upstream.



DESCRIBE PROPOSED IMPACT:	
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	Str		fied Stream N	lethodology 1	Form	ginia	m 1)			
Project #	Project Na		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Bridge C	-	Chesapeake	R3	0208020802	4/22/2014	16	444	N/A	
	e(s) of Evaluator(s)		e and Inform							
	ilson & Dave Kwasniewski		Newton Cree							
1. Channel C	Condition: Assess the cross-s	ection of the stream		ondition (erosion, Conditional Catego						
	Optimal	Subo	ptimal	Mar	ginal	Po	oor	Sev	vere	
	The same			1	5	all	st de la constitución de la cons	Deeply incised	(or excayated).	
Channel Condition	Very little incision or active erosion; 100% stable banks. Vegetative surface protection or natural rock prominent (80-100%). AND/OR Stable point bars/bankfull benches a present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bat and transverse bars few. Transien sediment deposition covers less the 10% of bottom.	erosion or unprotect banks are stable (6 protection or natura 80%) AND/OR Decontribute to stabili low flow channel Stream likely has benches, or newly calong portions of the sediment covers 11 in	ew areas of active ted banks. Majority of 0-80%). Vegetative I rock prominent (60-positional features by. The bankfull and s are well defined, access to bankfull eleveloped floodplains he reach. Transient 0-40% of the stream tom.	Banks more stable the to lower bank slop present on 40-60% of protection on 40-60% of protection on 40-60% may bevertical or undof stream is covered may be temporary instability. Deposit stability, may be formishaped channels hav on > 40% of the banks.	is than Severe or Poor. van Severe or Poor due se. Erosion may be both banks. Vegetative of banks. Streambanks ercut. AND/OR 40-60% by sediment. Sediment vitransient, contribute ion that contribute to ing/present. AND/OR V- re vegetative protection inks and depositional mithoute to stability.	unstable. Likely to with both banks are near von 60-80% of banks. present on 20-40 insufficient to preven 80% of the stream is Sediment is temporand contributing to i shaped channels have is present on > 40% of	d. Vertically/laterally of bentical. Erosion present vegetative protection % of banks, and is terosion. AND/OR 60- covered by sediment. any/transient in nature, nstability. AND/OR V- e vegetative protection of the banks and stable sition is absent.	vertical/lateral in- incision, flow contain Streambed below av majority of banks Vegetative protecti than 20% of banks erosion. Obvious present. Erosion/ 100%. AND/OR A Greater than 80%	stability. Severe led within the banks. rerage rooting depth, vertical/undercut. ion present on less s, is not preventing s bank sloughing fraw banks on 80-ggrading channel. s of stream bed is ion, contributing to	
	10/0 0/1 500001111			reatures which co	ontribute to stability.			and/or subter		CI
Score	3	2	2.4		2	1	.6	,	1	2.0
NOTES>>	Stream is located in	botil a resident		•	awn) observe		ks relatively s	stable with he	ibaceous	
2. RIPARIAN	N BUFFERS: Assess both ba				ugh measurement	s of length & widt	h may be accepta	1		
	Optimal		nditional Category potimal Marginal		Poor		NOTES>>			
		High Suboptimal: Riparian areas	Low Suboptimal: Riparian areas with tree stratum	High Marginal:	Low Marginal: Non-maintained,	High Poor: Lawns,				
Riparian Buffers	Tree stratum (dbh > 3 inches) press with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas.	a to 60% tree	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Buffers	with > 60% tree canopy cover and non-maintained understory. Wetland	(dbh > 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable			
	with > 60% tree canopy cover and non-maintained understory. Wetland	nt, present, with 30% red 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dib +3 inches) present, with <30% tree canopy cover with maintained understory.	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.			
Condition Scores 1. Delineate rips descriptors. 2. Determine squelow.	with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream be quare footage for each by measure	nt (dbh > 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coing or estimating length or estimating length 1.2	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth cutowidth.	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 addition Scores us	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5			
Condition Scores 1. Delineate rip: descriptors. 2. Determine squelow. 3. Enter the % F	with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5	nt (dbh > 3 inches) present, with 30% to 60% tree ds canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coing or estimating length or estimating length 1.2	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth cutowidth.	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 addition Scores us	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5			
Condition Scores 1. Delineate ripodescriptors. 2. Determine squelow.	with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream begaver footage for each by measu	td, dish > 3 inches) present, with 30% to 60% tree do canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High 1.2 Ink into Condition Coding or estimating let triparian category in	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and wi	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 addition Scores us	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5			
Condition Scores 1. Delineate rips descriptors. 2. Determine squelow. 3. Enter the % F Right Bank	with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream be quare footage for each by measu Riparian Area and Score for each % Riparian Area	the distribution of the di	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Cought and width. Cought and wi	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 addition Scores us	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	Cl≕ (Sum % RA * S Rt Bank Cl >	scores*0.01)/2	CI
Condition Scores 1. Delineate rip: descriptors. 2. Determine squelow. 3. Enter the % F	with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream be quare footage for each by measu Riparian Area and Score for each % Riparian Area 50% Score > 0.6	the distribution of the condition of the	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and w	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 addition Scores us	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I	Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	`		CI 0.79
Condition Scores 1. Delineate ripa descriptors. 2. Determine squescriptors. 3. Enter the % F. Right Bank Left Bank 3. INSTREAM	with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream be quare footage for each by measure footage footage for each by measure footage for each by measure footage footage for each by measure footage for each by measure footage footage footage for each by measure footage footage footage for each by measure footage	the distribution of the condition of the	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth and congth a	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us Calculators are pro	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 Loging the povided for you	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I Blocks 6	Impervious surfaces, mine spoil lands, denuded surfaces, con corps, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	Rt Bank CI > Lt Bank CI > NOTES>>hig sediment de	0.79 0.79 gh amount of eposition,	
Condition Scores 1. Delineate ripz descriptors. 2. Determine squelow. 3. Enter the % F Right Bank Left Bank 3. INSTREAI undercut banks;	with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream be quare footage for each by measure footage footage for each by measure footage for each by measure footage footage for each by measure footage for each by measure footage footage for each by measure footage for each by measure footage	the distribution of the condition of the	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth and congth a	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us calculators are produced to the cover.	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 Loging the povided for you	maintained areas, nurseries; no-till cropland; actively grazed pastures, sparsely eyelated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I Blocks 6	Impervious surfaces, mine spoil lands, denuded surfaces, con corps, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	Rt Bank CI > Lt Bank CI > NOTES>>hig sediment de minimal riffle sequence, se	0.79 0.79 If amount of position, pool ome woody	
Condition Scores 1. Delineate ripa descriptors. 2. Determine squescriptors. 3. Enter the % F Right Bank Left Bank 3. INSTREA! undercut banks;	with > 60% tree canopy cover and non-maintained understory. Wetlan located within the riparian areas. 1.5 arian areas along each stream be quare footage for each by measu Riparian Area and Score for each % Riparian Area > 50% Score > 0.6 % Riparian Area > 50% Score > 0.6 M HABITAT: Varied substrate root mats; SAV; riffle poole com	the control of the co	(dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation). Low 1.1 ategories and Congth and width. Congth and width. Congth and congth a	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 Indition Scores us Calculators are pro- calculators are pro- difference of the control of the control stable habitat ele present in 10-a0f are adequate for the control of the control are adequate for the control of	dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory. Low 0.75 ing the vided for you	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % I Blocks 6 Habitat element lacking or are u elements are typic	Impervious surfaces, mine spoil lands, denuded surfaces, con corps, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100%	Rt Bank CI > Lt Bank CI > NOTES>>hig sediment de minimal riffle	0.79 0.79 If amount of position, pool ome woody	

	St	ream In	npact A	ssessm	ent Fo	rm Pag	e 2		
Project #	Applicant	Applicant			HUC	Date	Data Point	SAR length	Impact Factor
45612-001	VDOT	Chesapeake	R3	0208020802	2/5/2014	16	444	N/A	
	L ALTERATION: Stream cross spoil piles, constrictions, livestock		Condition	al Category				NOTES>>dit channel loca I-64 and priv	ated between
	Negligible Minor Moderate Severe				vere		-		
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter of 80% of banks sh	of reach is disrupted nel alterations listed guidelines AND/OR hored with gabion, or cement.		
SCORE	1.5	1.3	1.1	0.9	0.7	0).5		
	REACH C	ONDITION I	NDEX and S	TREAM CO	NDITION UN	ITS FOR TH	IS REACH		
VOTE: The Cls and I	RCI should be rounded to 2 decimal places.	The CR should be rou	nded to a whole numb	er.			THE REACH	CONDITION IN	DEX (RCI) >>

RCI= (Sum of all Cl's)/5 COMPENSATION REQUIREMENT (CR) >>

N/A

CR = RCI X LF X IF

INSERT PHOTOS:

Photo of SAR 16 looking upstream.



Photo of SAR 16 looking downstream.



DESCRIBE PROPOSED IMPACT:

	Stre		fied Stream N	lethodology 1	Form for use in Virg	ginia	m 1)			
Project #	Project Nan		Locality	Cowardin Class.	HUC	Date	SAR#	Impact/SAR length	Impact Factor	
45612-001	I-64 / High Rise Bridge Co	•	Chesapeake	R3	0208020802	4/22/2014	17	284	N/A	
	e(s) of Evaluator(s)		e and Inform							
	/ilson & Dave Kwasniewski		Newton Cree							
1. Channel C	Condition: Assess the cross-se	ection of the stream		ondition (erosion, Conditional Catego						
	Optimal	Subo	ptimal	Mar	ginal	Po	oor	Sev	vere	
	The state of			1		all	st de la constitución de la cons	Deeply incised	(or excavated),	
Channel Condition	Very little incision or active erosion; 8 100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches an present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars and transverse bars few. Transient sediment deposition covers less that	orosion or unprotect banks are stable (6 protection or natura 80%) AND/OR Detection of the contribute to stabili low flow channel Stream likely has benches, or newly calong portions of the sediment covers 11 process.	ew areas of active ted banks. Majority of 0-80%). Vegetative I rock prominent (60-positional features ety. The bankfull and s are well defined. access to bankfull beveloped floodplains he reach. Transient 0-40% of the stream tom.	Banks more stable the to lower bank slop present on 40-60% of protection on 40-60% of protection on 40-60% may bevertical or undo of stream is covered may be temporary instability. Deposit stability, may be form shaped channels hav on > 40% of the be	is than Severe or Poor. an Severe or Poor due se. Erosion may be both banks. Vegetative of banks. Streambanks forcut. AND/OR 40-60% by sediment. Sediment 'transient, contribute to not that contribute to ng/present. AND/OR V- e vegetative protection neks and depositional	unstable. Likely to with both banks are near von 60-80% of banks. present on 20-40 insufficient to preven 80% of the stream is Sediment is temporand contributing to i shaped channels have is present on > 40% of	d. Vertically/laterally fen further. Majority of ertical. Erosion present Vegetative protection % of banks, and is erosion. AND/OR 60-covered by sediment. anylransient in nature, stability. AND/OR V-e vegetative protection of banks and stable sistion is absent.		ned within the banks. serage rooting depth, vertical/undercut. son present on less s, is not preventing s bank sloughing raw banks on 80- ggrading channel, s of stream bed is sion, contributing to	
	10% of bottom.			features which co	ontribute to stability.			instability. Multiple and/or subter		CI
Score	3 Stream is located in f	1	2.4	l	2	l	.6	1		2.4
	Optimal	High Suboptimal: Riparian areas with tree stratum	nditional Cate ptimal Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches)	Mar High Marginal: Non-maintained,	Low Marginal: Non-maintained, dense herbaceous	High Poor: Lawns, mowed, and	oor	NOTES>>		
		(dbh > 3 inches)		dense herbaceous	vegetation, riparian areas lacking shrub	maintained areas, nurseries; no-till cropland; actively	Low Poor: Impervious surfaces, mine			
Riparian Buffers	Tree stratum (dbh > 3 inches) preser with > 60% tree canopy cover and a non-maintained understory. Wetland located within the riparian areas.	t, present, with 30% to 60% tree	present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	vegetation, riparian	maintained areas, nurseries; no-till	Impervious			
Buffers Buffers	with > 60% free canopy cover and a non-maintained understory. Wetland located within the riparian areas.	t, present, with 30% to 60% tree is canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. High	present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with					

Stream Impact Assessment Form Page 2 Applicant Cowardin Class Data Point SAR length Project # Impact Factor 45612-001 VDOT Chesapeake 0208020802 2/5/2014 N/A 4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, NOTES>> embankments, spoil piles, constrictions, livestock Conditional Category Moderate Minor Negligible Severe 40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered. 60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines If stream has been channelized, normal stable stream meander pattern has not recovered. 20-40% of the stream reach is Less than 20% of Channel Greater than 80% of reach is disrupte the stream reach is disrupted by any of the channel alterations listed in Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized. disrupted by any by any of the channel alterations listed in the parameter guidelines AND/OR 80% of banks shored with gabion, Alteration of the channel alterations listed i the parameter the parameter riprap, or cement. guidelines. guidelines. SCORE 1.5 1.3 1.1 0.9 0.7 0.5 1.10 REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >>

1.09

RCI= (Sum of all CI's)/5 COMPENSATION REQUIREMENT (CR) >>

N/A

CR = RCI X LF X IF

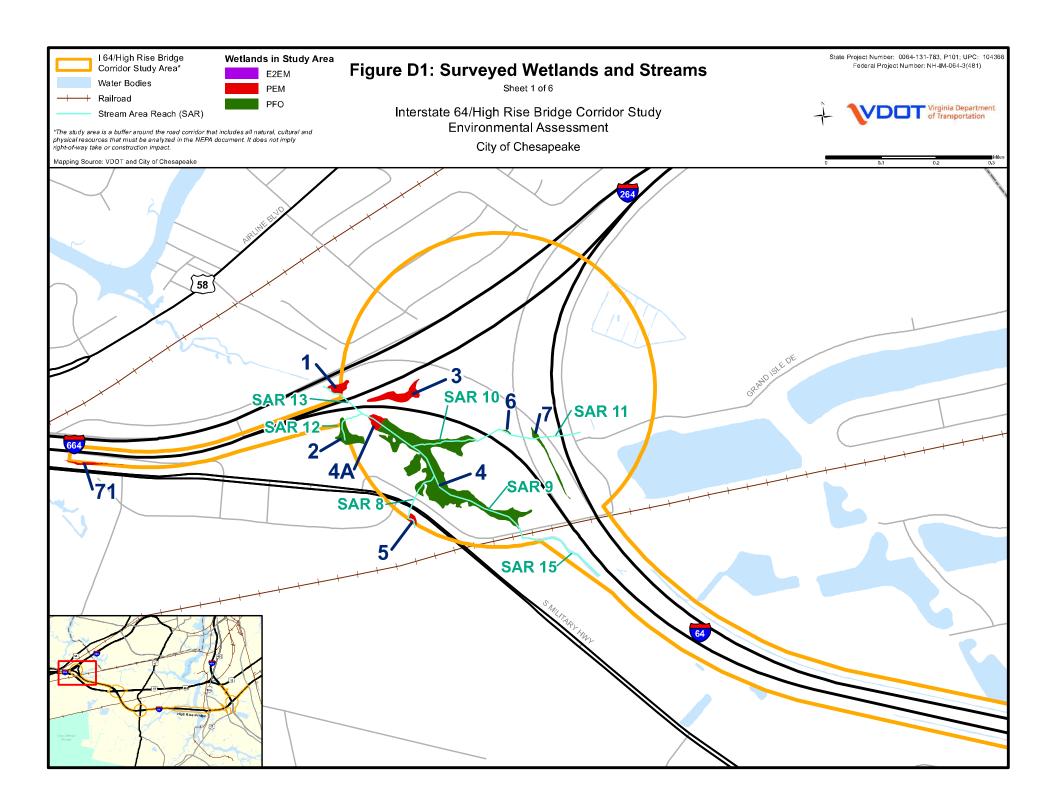
INSERT PHOTOS:

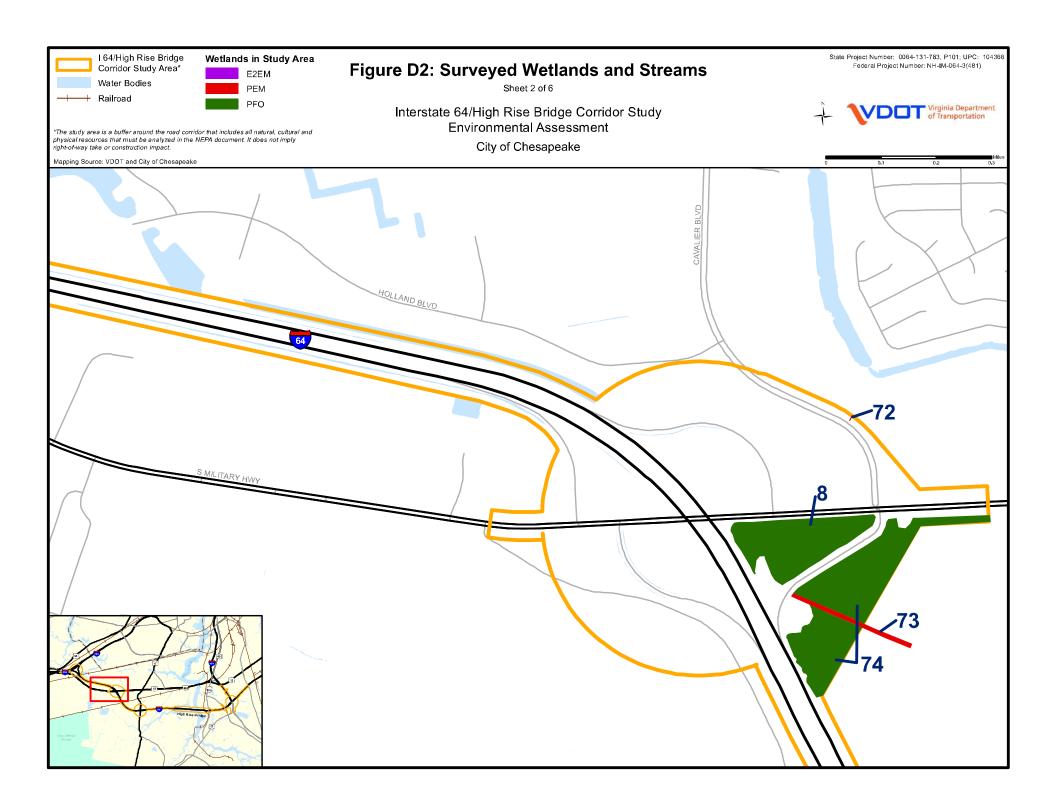
Photo of SAR 17 looking downstream.

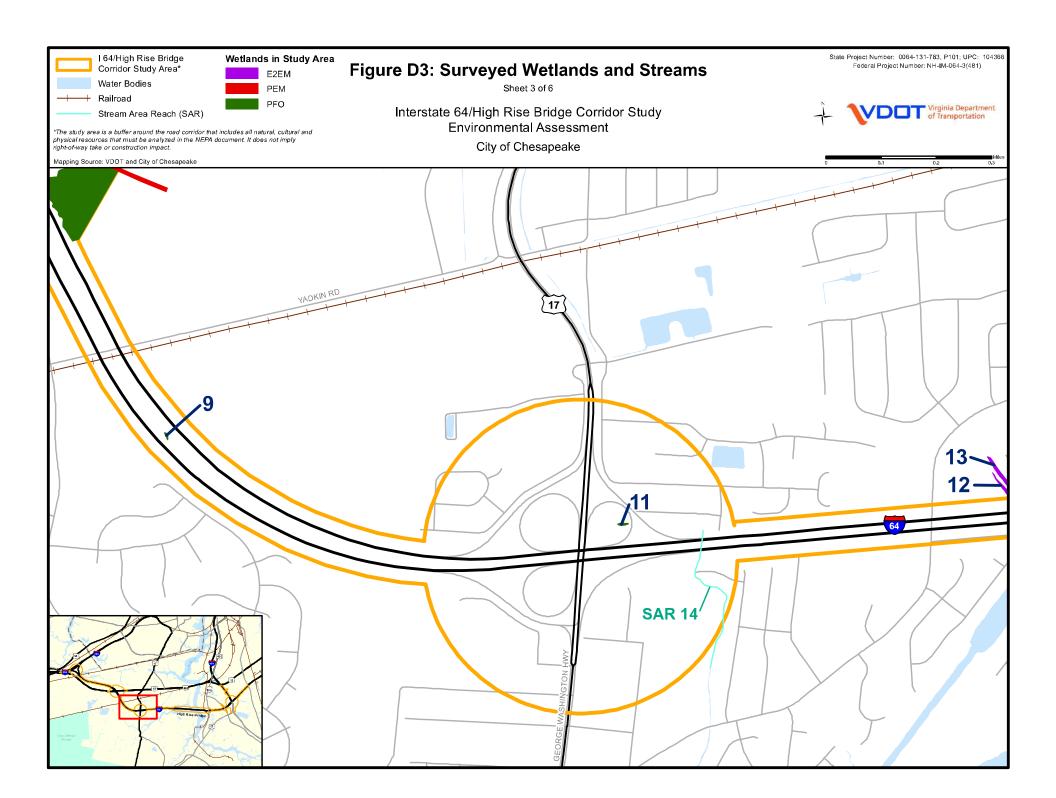


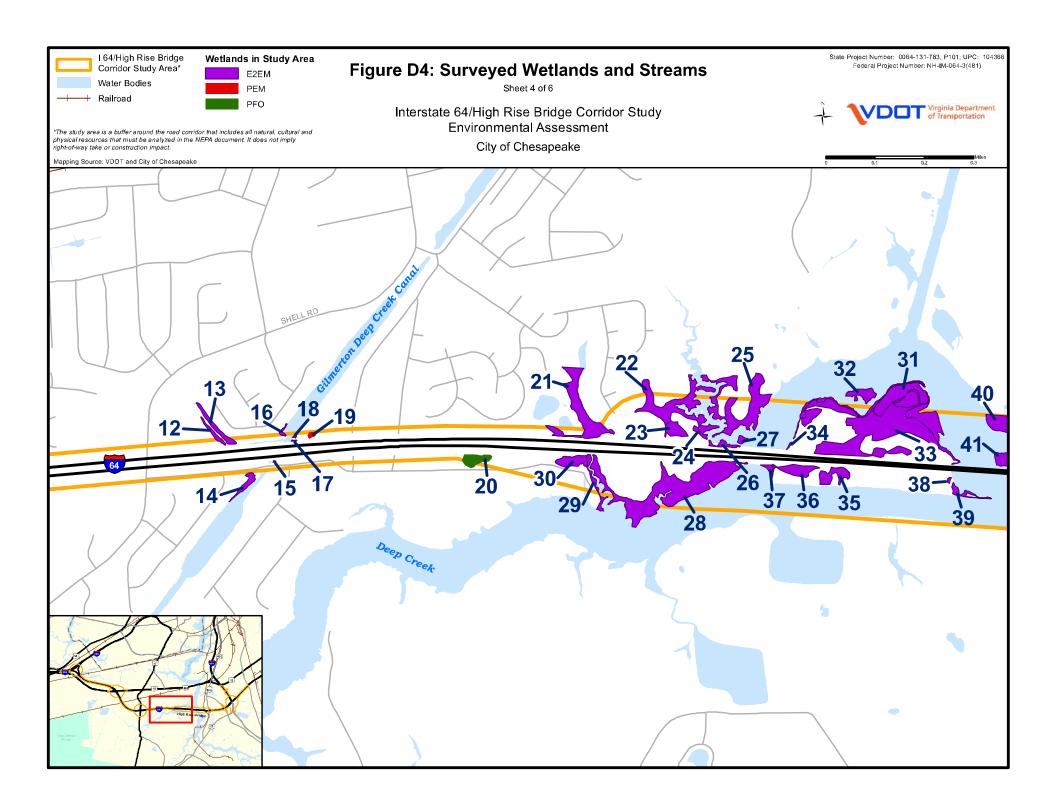
DESCRIBE PROPOSED IMPACT:

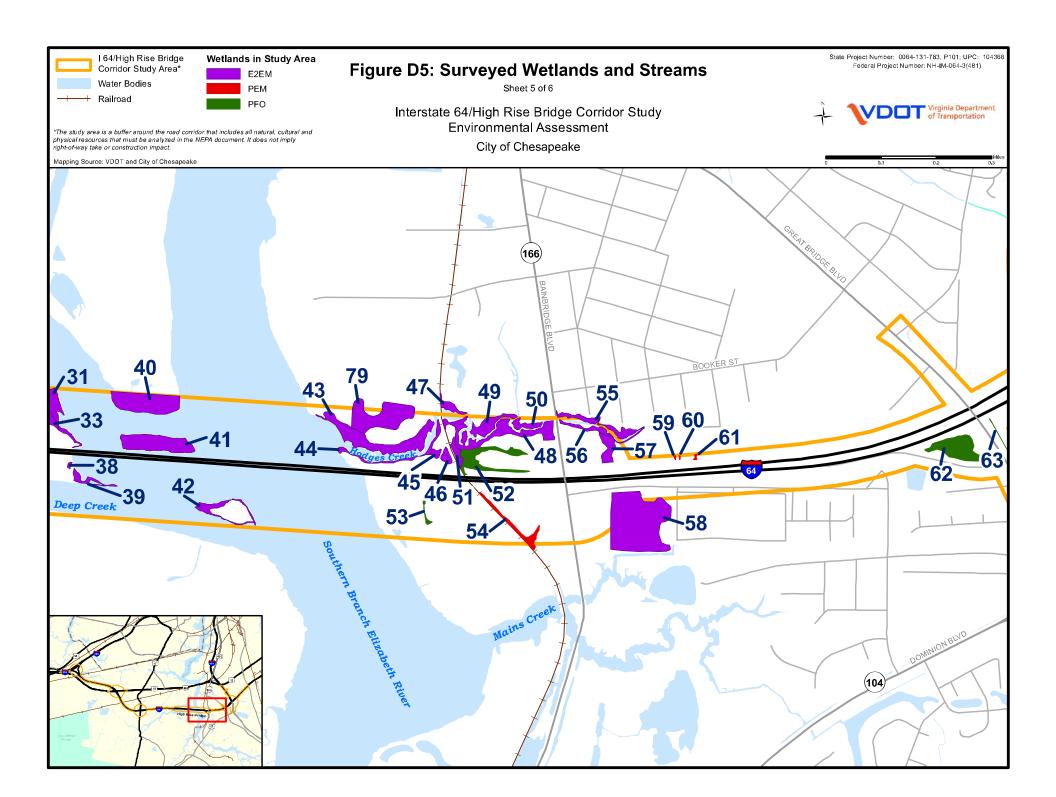


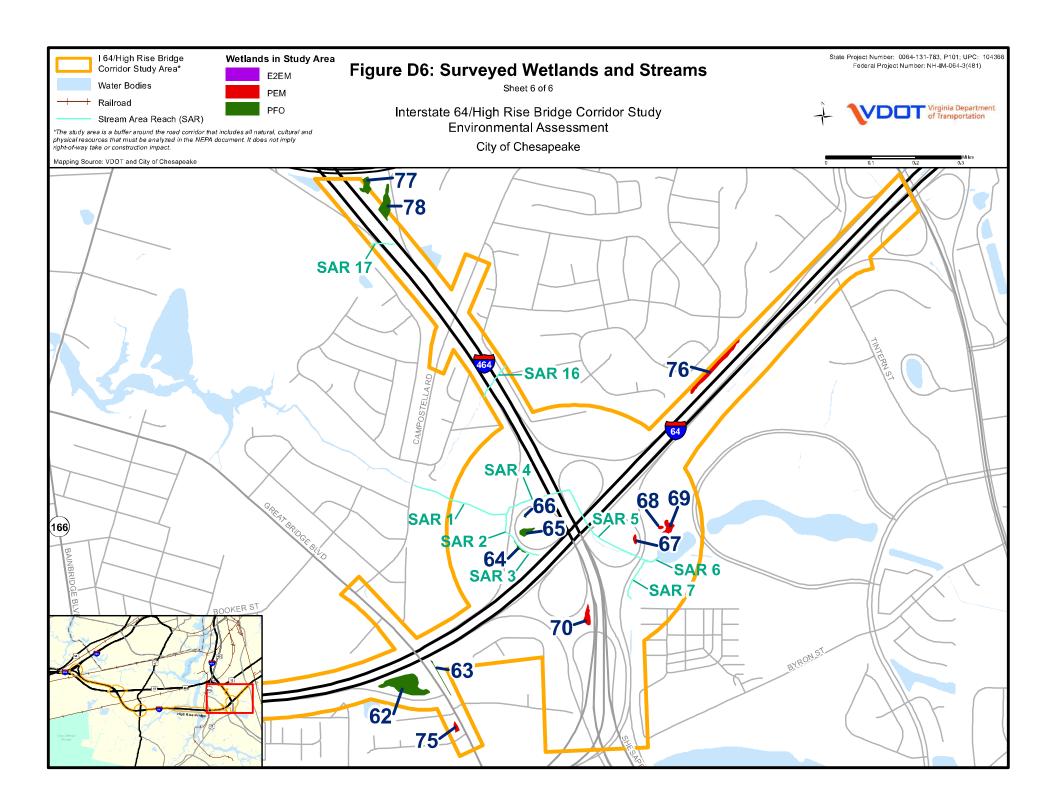






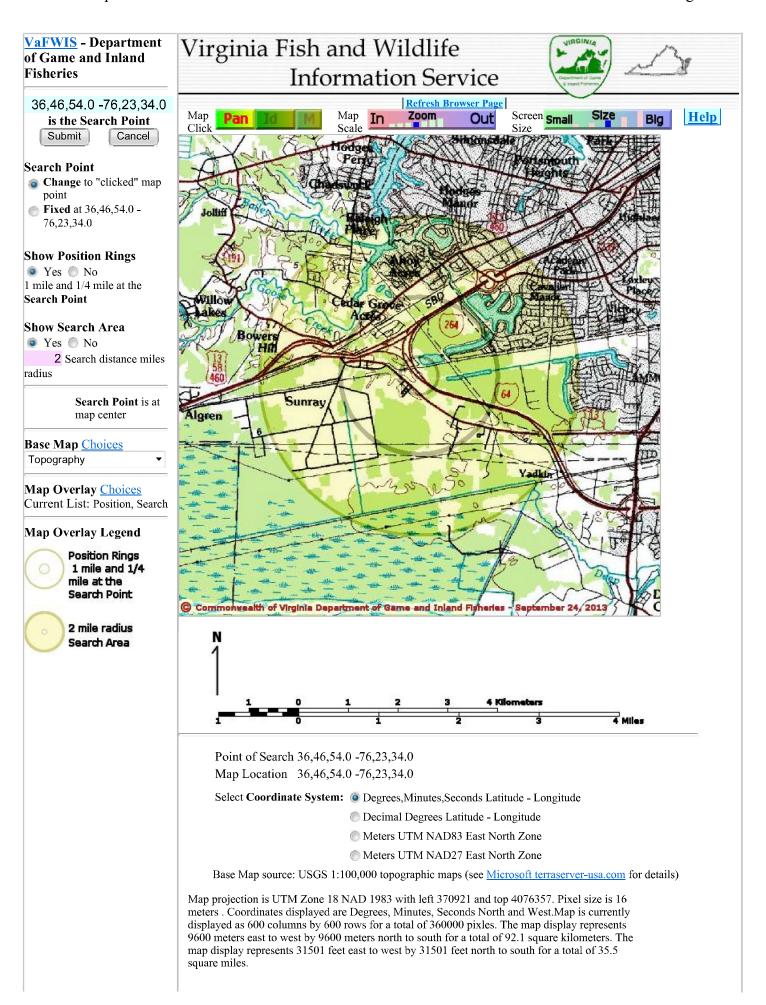








VaFWIS Map Page 1 of 2



VaFWIS Map Page 2 of 2

Topographic maps and Black and white aerial photography for year 1990+are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia
Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland

map assembled 2013-09-24 08:41:46 (qa/qc December 5, 2012 8:04 - tn=490642 dist=3218

\$poi=36.7816666 -76.3927777

Fisheries.

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VaFWIS Initial Project Assessment ReportCompiled on 9/24/2013, 8:42:52 AM

Help

Known or likely to occur within a 2 mile radius around point 36,46,54.0 76,23,34.0 in 550 Chesapeake City, 740 Portsmouth City, VA

View Map of Site Location

514 Known or Likely Species ordered by Status Concern for Conservation (displaying first 34) (34 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010032	FESE	II	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
030074	FESE		Turtle, Kemp's ridley sea	Lepidochelys kempii		BOVA
030071	FTST	I	Turtle, loggerhead sea	Caretta caretta		BOVA
040120	FTST	I	Plover, piping	Charadrius melodus		BOVA
040110	SE	I	Rail, black	Laterallus jamaicensis		BOVA
050034	SE	I	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		BOVA
030013	SE	II	Rattlesnake, canebrake	Crotalus horridus	Yes	BOVA,Habitat,SppObs
040096	ST	Ι	Falcon, peregrine	Falco peregrinus		BOVA
040129	ST	I	Sandpiper, upland	Bartramia longicauda		BOVA
040293	ST	I	Shrike, loggerhead	Lanius ludovicianus		BOVA
040179	ST	I	Tern, gull-billed	Sterna nilotica		BOVA
050008	ST	IV	Shrew, Dismal Swamp southeastern	Sorex longirostris fisheri	Yes	BOVA,Habitat,SppObs
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
010038	FC	IV	Alewife	Alosa pseudoharengus		BOVA
040144	FC	IV	Knot, red	Calidris canutus rufus		BOVA
010045	FC		Herring, blueback	Alosa aestivalis		BOVA
040093	FS	II	Eagle, bald	Haliaeetus leucocephalus	Yes	BOVA,BAEANests
100002	FS	III		Euphyes dukesi		BOVA

1			Skipper, Duke's (or	I		
			scarce swamp)			
030067	СС	II	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin		BOVA,Habitat
030063	CC	III	Turtle, spotted	Clemmys guttata	<u>Yes</u>	BOVA,SppObs
040225		I	Sapsucker, yellow-bellied	Sphyrapicus varius		BOVA
040319		I	Warbler, black- throated green	Dendroica virens		BOVA
040422		I	Warbler, Wayne's	Dendroica virens waynei		Habitat
020063		II	Toad, oak	Anaxyrus quercicus		BOVA
040038		II	Bittern, American	Botaurus lentiginosus		BOVA
040052		II	Duck, American black	Anas rubripes		BOVA
040029		II	Heron, little blue	Egretta caerulea caerulea		BOVA
040105		II	Rail, king	Rallus elegans		BOVA,Habitat
040381		II	Sparrow, saltmarsh sharp-tailed	Ammodramus caudacutus		BOVA
040186		II	Tern, least	Sterna antillarum		BOVA
040187		II	Tern, royal	Sterna maxima maximus		BOVA
040320		II	Warbler, cerulean	Dendroica cerulea		BOVA
040304		II	Warbler, Swainson's	Limnothlypis swainsonii		BOVA
040266		II	Wren, winter	Troglodytes troglodytes		BOVA

To view All 514 species View 514

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Bat Colonies or Hibernacula: Not Known

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests (3 records)

View Map of All Query Results Bald Eagle Nests

Nest	N Obs	Latest Date	DGIF Nest Status	View Map
CP0301	12	Apr 25 2011	RECENTLY ACTIVE	<u>Yes</u>
CP0701	4	Mar 1 2008	UNKNOWN	Yes
CP0801	6	Feb 17 2010	UNKNOWN	Yes

Displayed 3 Bald Eagle Nests

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species (5 Species)

<u>View Map of Combined Terrestrial Habitat Predicted for 5 WAP Tier I & II Species Listed Below</u>

ordered by Status Concern for Conservation

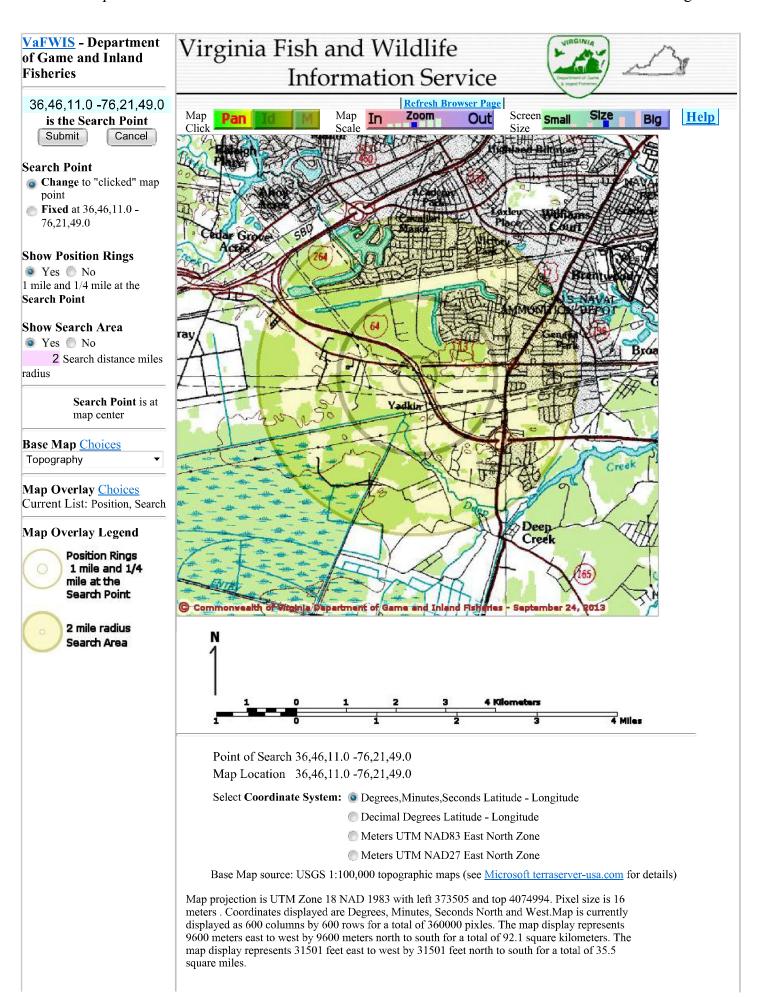
BOVA Code			Common Name	Scientific Name	View Map
030013	SE	II	Rattlesnake, canebrake	Crotalus horridus	Yes
050008	ST	IV	Shrew, Dismal Swamp southeastern	Sorex longirostris fisheri	Yes
030067	СС	II	Terrapin, northern diamond- backed	Malaclemys terrapin terrapin	Yes
040422		I	Warbler, Wayne's	Dendroica virens waynei	Yes
040105		II	Rail, king	Rallus elegans	Yes

Public Holding N/A

 $Compiled \ on \ 9/24/2013, \ 8:42:52 \ \Lambda M \ \ I490642.0 \quad report=IP\Lambda \quad search Type=R \quad dist= 3218 \ poi= 36,46,54.0 \ 76,23,34.0 \ \ A = 100 \$

PixelSize=64; Anadromous=0.031081; BECAR=0.025886; Bats=0.026367; Buffer=0.175744; County=0.075027; Impediments=0.026244; Init=0.212005; PublicLands=0.048024; SppObs=0.60118; TEWaters=0.042708; TierReaches=0.095567; TierTerrestrial=0.420374; Total=1.651502; Trout=0.044399

VaFWIS Map Page 1 of 2



VaFWIS Map Page 2 of 2

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http://www.national.geographic.com/topo

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VaFWIS Initial Project Assessment ReportCompiled on 9/24/2013,

<u>Help</u>

8:40:11 AM

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040120	FTST	I	Plover, piping	Charadrius melodus		BOVA
040110	SE	I	Rail, black	Laterallus jamaicensis		BOVA
050034	SE	I	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		BOVA
030013	SE	II	Rattlesnake, canebrake	Crotalus horridus		BOVA,Habitat
040096	ST	I	Falcon, peregrine	Falco peregrinus		BOVA
040129	ST	I	Sandpiper, upland	Bartramia longicauda		BOVA
040293	ST	I	Shrike, loggerhead	Lanius ludovicianus		BOVA
040179	ST	I	Tern, gull-billed	Sterna nilotica		BOVA
050008	ST	IV	Shrew, Dismal Swamp southeastern	Sorex longirostris fisheri		BOVA,Habitat
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
010038	FC	IV	<u>Alewife</u>	Alosa pseudoharengus		BOVA
040144	FC	IV	Knot, red	Calidris canutus rufus		BOVA
010045	FC		Herring, blueback	Alosa aestivalis		BOVA
040093	FS	II	Eagle, bald	Haliaeetus leucocephalus		BOVA
100002	FS	III	Skipper, Duke's (or scarce swamp)	Euphyes dukesi		BOVA
030067	СС	II	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin		BOVA,Habitat
030063	CC	III	Turtle, spotted	Clemmys guttata		BOVA
040225		I	Sapsucker, yellow- bellied	Sphyrapicus varius		BOVA
040319		I	Warbler, black-throated green	Dendroica virens		BOVA

040422	I	Warbler, Wayne's	Dendroica virens waynei	Habitat
020063	II	Toad, oak	Anaxyrus quercicus	BOVA
040038	II	Bittern, American	Botaurus lentiginosus	BOVA
040052	II	Duck, American black	Anas rubripes	BOVA
040029	II	Heron, little blue	Egretta caerulea caerulea	BOVA
040105	II	Rail, king	Rallus elegans	BOVA,Habitat
040381	II	Sparrow, saltmarsh sharp -tailed	Ammodramus caudacutus	BOVA
040186	II	Tern, least	Sterna antillarum	BOVA
040187	II	Tern, royal	Sterna maxima maximus	BOVA
040320	II	Warbler, cerulean	Dendroica cerulea	BOVA
040304	II	Warbler, Swainson's	Limnothlypis swainsonii	 BOVA
040266	II	Wren, winter	Troglodytes troglodytes	 BOVA

To view All 512 species View 512

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

*** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Bat Colonies or Hibernacula: Not Known

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species (5 Species)

View Map of Combined Terrestrial Habitat Predicted for 5 WAP Tier I & II Species Listed Below

ordered by Status Concern for Conservation

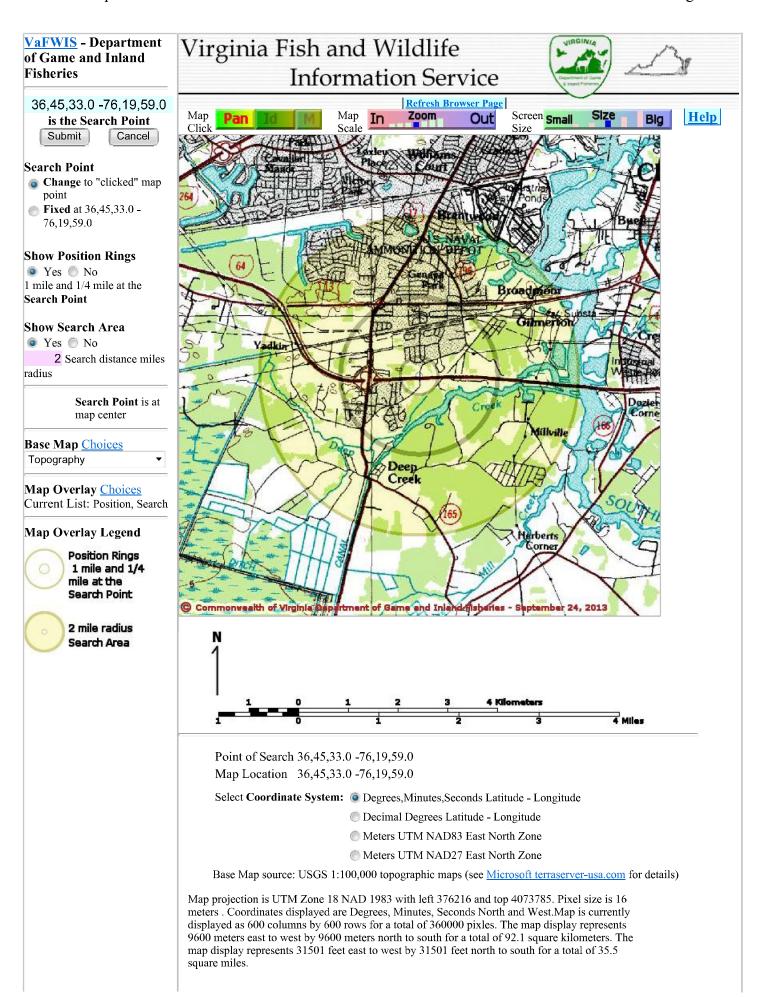
BOVA Code	Status* Tiar**		Common Name	Scientific Name	View Map
030013	SE	II	Rattlesnake, canebrake	Crotalus horridus	Yes
050008	ST	IV	Shrew, Dismal Swamp southeastern	Sorex longirostris fisheri	Yes
030067	СС	II	Terrapin, northern diamond- backed	Malaclemys terrapin terrapin	Yes
040422		Ι	Warbler, Wayne's	Dendroica virens waynei	Yes
040105		II	Rail, king	Rallus elegans	Yes

Public Holdings: (1 names)

Name	Agency	Level
Great Dismal Swamp National Wildlife Refuge	U.S. Fish and Wildlife Service	Federal

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VaFWIS Map Page 1 of 2



Page 2 of 2 VaFWIS Map

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http://www.national.geographic.com/topo

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map assembled 2013-09-24 08:44:46 (qa/qc December 5, 2012 8:04 - tn=490645 dist=3218 \$poi=36.7591666 -76.3330555

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VaFWIS Initial Project Assessment ReportCompiled on 9/24/2013, 8:46:28 AM

Help

Known or likely to occur within a 2 mile radius around point 36,45,33.0 76,19,59.0 in 550 Chesapeake City, VA

View Map of Site Location

508 Known or Likely Species ordered by Status Concern for Conservation (displaying first 30) (30 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010032	FESE	II	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
030071	FTST	I	Turtle, loggerhead sea	Caretta caretta		BOVA
040110	SE	Ι	Rail, black	Laterallus jamaicensis		BOVA
050034	SE	I	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		BOVA
030013	SE	II	Rattlesnake, canebrake	Crotalus horridus		BOVA,Habitat
040096	ST	I	Falcon, peregrine	Falco peregrinus	Yes	BOVA,SppObs
040129	ST	Ι	Sandpiper, upland	Bartramia longicauda		BOVA
040293	ST	I	Shrike, loggerhead	Lanius ludovicianus		BOVA
050008	ST	IV	Shrew, Dismal Swamp southeastern	Sorex longirostris fisheri		BOVA,Habitat
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
010038	FC	IV	<u>Alewife</u>	Alosa pseudoharengus	Yes	BOVA,SppObs
040144	FC	IV	Knot, red_	Calidris canutus rufus		BOVA
010045	FC		Herring, blueback	Alosa aestivalis	Yes	BOVA,SppObs
040093	FS	II	Eagle, bald	Haliaeetus leucocephalus		BOVA
100002	FS	III	Skipper, Duke's (or scarce swamp)	Euphyes dukesi		BOVA
030067	СС	II	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin		BOVA
030063	CC	III	Turtle, spotted	Clemmys guttata		BOVA
040225		I	Sapsucker, yellow- bellied	Sphyrapicus varius		BOVA
040319		I	Warbler, black-throated green	Dendroica virens		BOVA
040422		I	Warbler, Wayne's	Dendroica virens waynei		Habitat
020063	ĺ	II	Toad, oak	Anaxyrus quercicus		BOVA

040038	II	Bittern, American	Botaurus lentiginosus	BOVA
040052	II	Duck, American black	Anas rubripes	BOVA
040029	11	Heron, little blue	Egretta caerulea caerulea	BOVA
040105	II	Rail, king	Rallus elegans	BOVA,Habitat
040186	II	Tern, least	Sterna antillarum	BOVA
040187	11	Tern, royal	Sterna maxima maximus	BOVA
040320	II	Warbler, cerulean	Dendroica cerulea	BOVA
040304	II	Warbler, Swainson's	Limnothlypis swainsonii	BOVA
040266	II	Wren, winter	Troglodytes troglodytes	BOVA

To view All 508 species View 508

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Bat Colonies or Hibernacula: Not Known

Anadromous Fish Use Streams (1 records)

View Map of All Anadromous Fish Use Streams

C. ID	Stream Name		Anadromous Fish Species			
Stream ID			Different Species	Highest TE*	Highest Tier**	View Map
C20	Elizabeth river	Confirmed	1			Yes

Impediments to Fish Passage

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species (4 Species)

View Map of Combined Terrestrial Habitat Predicted for 4 WAP Tier I & II Species Listed Below

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
030013	SE	II	Rattlesnake, canebrake	Crotalus horridus	<u>Yes</u>
050008	ST	IV	Shrew, Dismal Swamp southeastern	Sorex longirostris fisheri	Yes
040422		I	Warbler, Wayne's	Dendroica virens waynei	Yes
040105		II	Rail, king	Rallus elegans	Yes

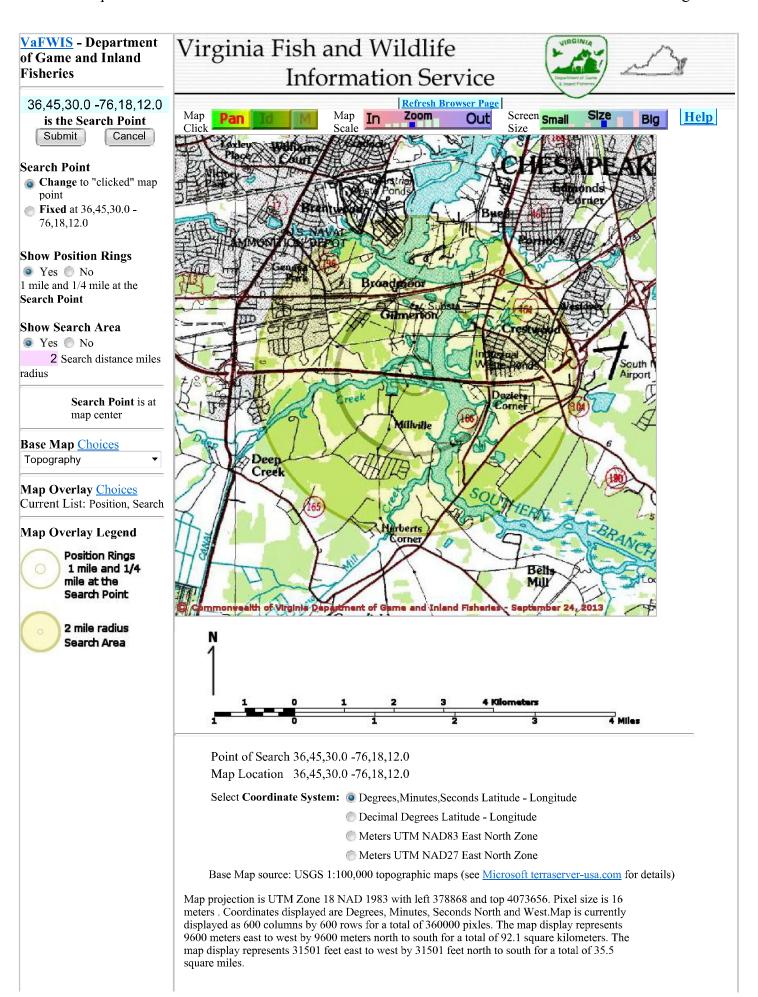
Public Holdings: (1 names)

Name	Agency	Level
US Ammunition Depot	U.S. Dept. of Navy	Federal

Compiled on 9/24/2013, 8:46:28 AM I490645.0 report=IPA searchType= R dist= 3218 poi= 36,45,33.0 76,19,59.0

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VaFWIS Map Page 1 of 2



Page 2 of 2 VaFWIS Map

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http://www.national.geographic.com/topo

All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2013-09-24 08:48:12 (qa/qc December 5, 2012 8:04 - tn=490651 dist=3218 \$poi=36.7583333 -76.3033333

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VaFWIS Initial Project Assessment ReportCompiled on 9/24/2013, 8:49:26 AM

Help

Known or likely to occur within a 2 mile radius around point 36,45,30.0 76,18,12.0 in 550 Chesapeake City, VA

View Map of Site Location

508 Known or Likely Species ordered by Status Concern for Conservation (displaying first 30) (30 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010032	FESE	II	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
030071	FTST	Ι	Turtle, loggerhead sea	Caretta caretta		BOVA
040110	SE	Ι	Rail, black	Laterallus jamaicensis		BOVA
050034	SE	I	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		BOVA
030013	SE	II	Rattlesnake, canebrake	Crotalus horridus		BOVA,Habitat
040096	ST	Ι	Falcon, peregrine	Falco peregrinus	Yes	BOVA,SppObs
040129	ST	Ι	Sandpiper, upland	Bartramia longicauda		BOVA
040293	ST	Ι	Shrike, loggerhead	Lanius ludovicianus		BOVA
050008	ST	IV	Shrew, Dismal Swamp southeastern	Sorex longirostris fisheri		BOVA,Habitat
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
010038	FC	IV	<u>Alewife</u>	Alosa pseudoharengus	Yes	BOVA,SppObs
040144	FC	IV	Knot, red_	Calidris canutus rufus		BOVA
010045	FC		Herring, blueback	Alosa aestivalis	Yes	BOVA,SppObs
040093	FS	II	Eagle, bald	Haliaeetus leucocephalus		BOVA
100002	FS	III	Skipper, Duke's (or scarce swamp)	Euphyes dukesi		BOVA
030067	СС	II	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin		BOVA
030063	CC	III	Turtle, spotted	Clemmys guttata		BOVA
040225		I	Sapsucker, yellow- bellied	Sphyrapicus varius		BOVA
040319		I	Warbler, black-throated green	Dendroica virens		BOVA
040422		I	Warbler, Wayne's	Dendroica virens waynei		Habitat
020063		II	Toad, oak	Anaxyrus quercicus		BOVA

040038	II	Bittern, American	Botaurus lentiginosus	BOVA
040052	П	Duck, American black	Anas rubripes	BOVA
040029	II	Heron, little blue	Egretta caerulea caerulea	BOVA
040105	II	Rail, king	Rallus elegans	BOVA,Habitat
040186	II	Tern, least	Sterna antillarum	BOVA
040187	II	Tern, royal	Sterna maxima maximus	BOVA
040320	II	Warbler, cerulean	Dendroica cerulea	BOVA
040304	II	Warbler, Swainson's	Limnothlypis swainsonii	BOVA
040266	II	Wren, winter	Troglodytes troglodytes	BOVA

To view All 508 species View 508

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Bat Colonies or Hibernacula: Not Known

Anadromous Fish Use Streams (1 records)

View Map of All Anadromous Fish Use Streams

C. ID	Stream Name		Anadro	X71 X 4		
Stream ID			Different Species	Highest TE*	Highest Tier**	View Map
C20	Elizabeth river	Confirmed	1			Yes

Impediments to Fish Passage

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species (4 Species)

<u>View Map of Combined Terrestrial Habitat Predicted for 4 WAP Tier I & II Species Listed Below</u>

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
030013	SE	II	Rattlesnake, canebrake	Crotalus horridus	Yes
050008	ST	IV	Shrew, Dismal Swamp southeastern	Sorex longirostris fisheri	Yes
040422		I	Warbler, Wayne's	Dendroica virens waynei	Yes
040105		II	Rail, king	Rallus elegans	Yes

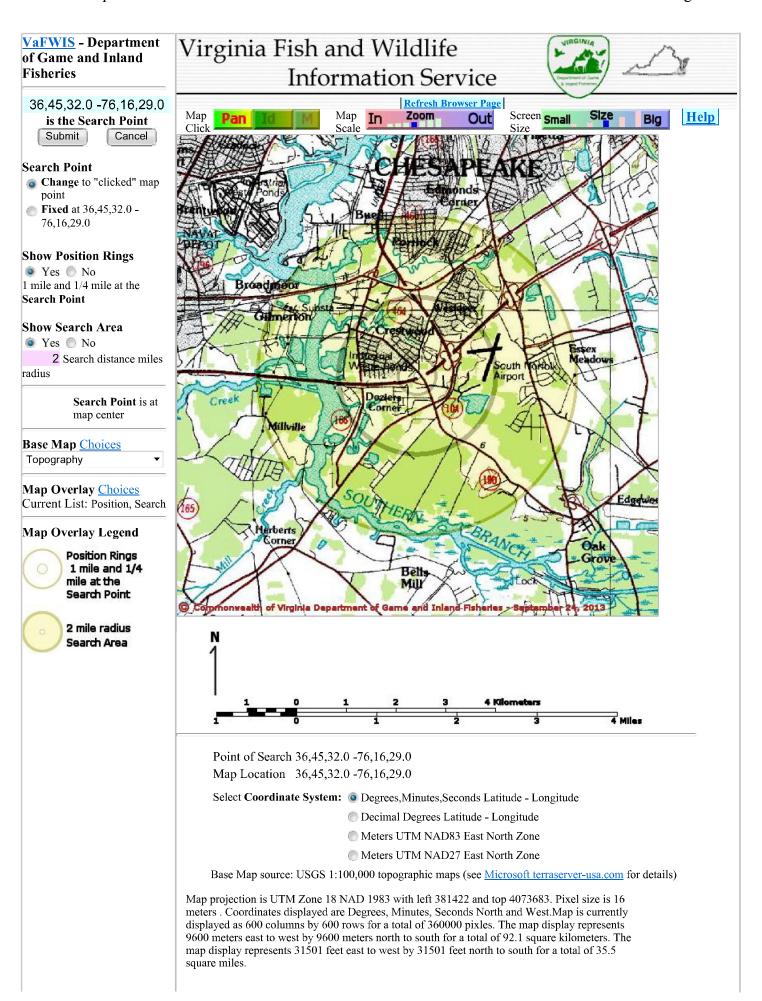
Public Holdings: (1 names)

Name	Agency	Level	
US Ammunition Depot	U.S. Dept. of Navy	Federal	

Compiled on 9/24/2013, 8:49:26 AM I490651.0 report=IPA searchType= R dist= 3218 poi= 36,45,30.0 76,18,12.0

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VaFWIS Map Page 1 of 2



Page 2 of 2 VaFWIS Map

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All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2013-09-24 08:51:01 (qa/qc December 5, 2012 8:04 - tn=490652 dist=3218 \$poi=36.7588888 -76.2747222

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VaFWIS Initial Project Assessment ReportCompiled on 9/24/2013, 8:52:20 AM

Help

Known or likely to occur within a 2 mile radius around point 36,45,32.0 76,16,29.0 in 550 Chesapeake City, VA

View Map of Site Location

507 Known or Likely Species ordered by Status Concern for Conservation (displaying first 30) (30 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
010032	FESE	II	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
030071	FTST	I	Turtle, loggerhead sea	Caretta caretta		BOVA
040110	SE	Ι	Rail, black	Laterallus jamaicensis		BOVA
050034	SE	I	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		BOVA
030013	SE	II	Rattlesnake, canebrake	Crotalus horridus		BOVA,Habitat
040096	ST	I	Falcon, peregrine	Falco peregrinus	Yes	BOVA,SppObs
040129	ST	Ι	Sandpiper, upland	Bartramia longicauda		BOVA
040293	ST	I	Shrike, loggerhead	Lanius ludovicianus		BOVA
050008	ST	IV	Shrew, Dismal Swamp southeastern	Sorex longirostris fisheri		BOVA,Habitat
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
010038	FC	IV	<u>Alewife</u>	Alosa pseudoharengus	Yes	BOVA,SppObs
040144	FC	IV	Knot, red_	Calidris canutus rufus		BOVA
010045	FC		Herring, blueback	Alosa aestivalis	Yes	BOVA,SppObs
040093	FS	II	Eagle, bald	Haliaeetus leucocephalus		BOVA
100002	FS	III	Skipper, Duke's (or scarce swamp)	Euphyes dukesi		BOVA
030067	СС	II	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin		BOVA
030063	CC	III	Turtle, spotted	Clemmys guttata		BOVA
040225		I	Sapsucker, yellow- bellied	Sphyrapicus varius		BOVA
040319		I	Warbler, black-throated green	Dendroica virens		BOVA
040422		I	Warbler, Wayne's	Dendroica virens waynei		Habitat
020063	ĺ	II	Toad, oak	Anaxyrus quercicus		BOVA

040038	II	Bittern, American	Botaurus lentiginosus	BOVA
040052	II	Duck, American black	Anas rubripes	BOVA
040029	II	Heron, little blue	Egretta caerulea caerulea	BOVA
040105	II	Rail, king	Rallus elegans	BOVA,Habitat
040186	II	Tern, least	Sterna antillarum	BOVA
040187	II	Tern, royal	Sterna maxima maximus	BOVA
040320	II	Warbler, cerulean	Dendroica cerulea	BOVA
040304	II	Warbler, Swainson's	Limnothlypis swainsonii	BOVA
040266	II	Wren, winter	Troglodytes troglodytes	BOVA

To view All 507 species View 507

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Bat Colonies or Hibernacula: Not Known

Anadromous Fish Use Streams (1 records)

View Map of All Anadromous Fish Use Streams

	Stream Name		Anadro	***		
Stream ID			Different Species	Highest TE*		View Map
C20	Elizabeth river	Confirmed	1			Yes

Impediments to Fish Passage

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species (4 Species)

<u>View Map of Combined Terrestrial Habitat Predicted for 4 WAP Tier I & II Species Listed Below</u>

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
030013	SE	II	Rattlesnake, canebrake	Crotalus horridus	Yes
050008	ST	IV	Shrew, Dismal Swamp southeastern	Sorex longirostris fisheri	Yes
040422		I	Warbler, Wayne's	Dendroica virens waynei	Yes
040105		II	Rail, king	Rallus elegans	Yes

Public Holdings:

N/A

Compiled on 9/24/2013, 8:52:20 AM I490652.0 report=IPA searchType= R dist= 3218 poi= 36,45,32.0 76,16,29.0

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APPENDIX F: USFWS IPaC SYSTEM SEARCH



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services 6669 Short Lane Gloucester, Virginia 23061



Date: September 24, 2013

Online Project Review Certification Letter

Project Name:	l-64 Widening and High Rise Bridge Replacement

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Virginia Field Office online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the referenced project in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA), and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 54 Stat. 250), as amended (Eagle Act). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

The species conclusions table in the enclosed project review package summarizes your ESA and Eagle Act conclusions. These conclusions resulted in "no effect" and/or "not likely to adversely affect" determinations for listed species and critical habitat and/or "no Eagle Act permit required" determinations for eagles regarding potential effects of your proposed project. We certify that the use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the "no effect" and "not likely to adversely affect" determinations for listed species and critical habitat and "no Eagle Act permit required" determinations for eagles. Additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages consideration of these species by avoiding adverse impacts to them. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of listed species, critical habitat, or bald eagles becomes available, this determination may be reconsidered. This certification letter is valid for one year.

Applicant Page 2 Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Virginia is available at our website http://www.fws.gov/northeast/virginiafield/endspecies/project_reviews.html. If you have any questions, please contact Kimberly Smith of this office at (804) 693-6694, extension 124.

Sincerely,

/s/ Cynthia A. Schulz

Cindy Schulz Supervisor Virginia Field Office

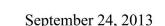
Enclosures - project review package



United States Department of the Interior

FISH AND WILDLIFE SERVICE VIRGINIA ECOLOGICAL SERVICES FIELD OFFICE 6669 SHORT LANE

GLOUCESTER, VA 23061 PHONE: (804)693-6694 FAX: (804)693-9032 URL: www.fws.gov/northeast/virginiafield/



Consultation Tracking Number: 05E2VA00-2013-SLI-2714

Project Name: I-64 Widening & Bridge Replacement

Subject: List of threatened and endangered species that may occur in your proposed project

location, and/or may be affected by your proposed project.

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having

similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan

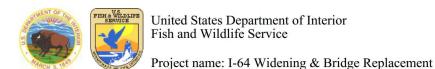
(http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and

http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment



Official Species List

Provided by:

VIRGINIA ECOLOGICAL SERVICES FIELD OFFICE 6669 SHORT LANE GLOUCESTER, VA 23061 (804) 693-6694 http://www.fws.gov/northeast/virginiafield/

Consultation Tracking Number: 05E2VA00-2013-SLI-2714

Project Type: Transportation

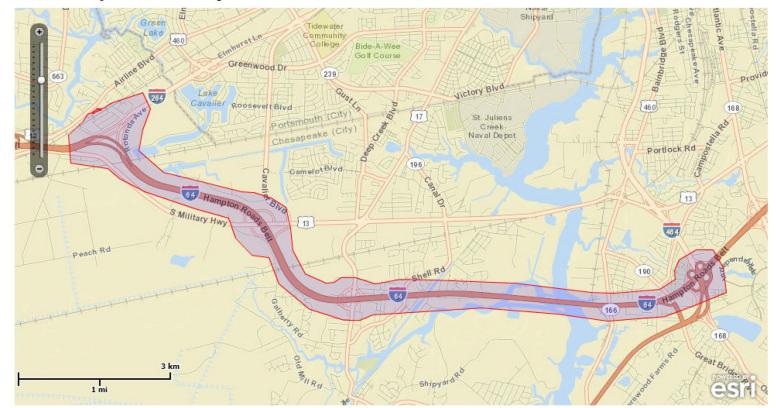
Project Description: I-64 proposed to be widened by adding additional lanes from the I-264/I-664 interchange to the east approximately 8 miles to the I-464 interchange and replacing the drawbridge over the Southern Branch of the Elizabeth River. Also includes interchange improvements.



United States Department of Interior Fish and Wildlife Service

Project name: I-64 Widening & Bridge Replacement

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-76.40113749 36.79227647, -76.40169173 36.79184009, -76.40258604 36.79161776, -76.4012119 36.7924498, -76.40113749 36.79227647)), ((-76.40258604 36.79161776, -76.4026195 36.7915975, -76.4021045 36.7915151, -76.40169173 36.79184009, -76.400345 36.7921749, -76.4011175 36.7922299, -76.40113749 36.79227647, -76.4010831 36.7923193, -76.40086 36.7923124, -76.3997613 36.7925255, -76.3982421 36.793364, -76.3912641 36.795206, -76.3895475 36.7923124, -76.3912641 36.7886006, -76.3921224 36.7848887, -76.3866292 36.7810391, -76.3809644 36.7799392, -76.3692914 36.7776018, -76.3665449 36.7774643, -76.3627683 36.7765019, -76.3595067 36.7748519, -76.3584768 36.7711393, -76.3579618 36.7671515, -76.3552152 36.763026, -76.3505804 36.7613757, -76.3488637 36.7615133, -76.3473188 36.7623384, -76.3438856 36.7623384, -76.3397657 36.7612382, -76.3341009 36.7620634, -76.3263761 36.7619258, -76.308695 36.7613757, -76.2917005 36.7597254, -76.2867223 36.7595879, -76.2765943 36.7602755, -76.2731611 36.7620634, -76.2733327 36.7635761, -76.2723028 36.7655013, -76.2685262 36.767289, -76.2647497 36.767289, -76.2625181 36.7641262, -76.2618314 36.7597254, -76.2685262





United States Department of Interior Fish and Wildlife Service

Project name: I-64 Widening & Bridge Replacement

36.757525, -76.2754184 36.7554757, -76.2880956 36.7546368, -76.2990819 36.7558746, -76.3160764 36.7569748, -76.3402807 36.755737, -76.3432332 36.7547605, -76.346821 36.7548637, -76.3542968 36.7567823, -76.3610517 36.7612382, -76.3632833 36.7659139, -76.3670598 36.7663264, -76.3706647 36.7693517, -76.3722097 36.7729269, -76.3795911 36.7745769, -76.3907491 36.7776018, -76.3964139 36.7799392, -76.3989803 36.7817266, -76.4072286 36.782689, -76.4077436 36.7876383, -76.4044906 36.7901266, -76.4034692 36.7913982, -76.40258604 36.79161776)))

Project Counties: Chesapeake, VA





United States Department of Interior Fish and Wildlife Service

Project name: I-64 Widening & Bridge Replacement

Endangered Species Act Species List

Species lists are not entirely based upon the current range of a species but may also take into consideration actions that affect a species that exists in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Please contact the designated FWS office if you have questions.

There are no listed species identified for the vicinity of your project.

Species Conclusions Table

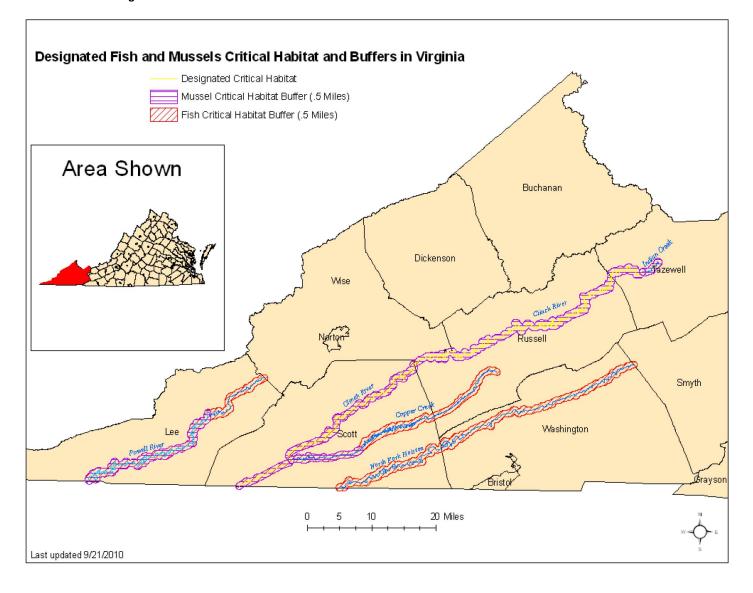
Project Name: I-64 Widening and High Rise Bridge Replacement

Date: September 24, 2013

Species / Resource Name	Conclusion	ESA Section 7 / Eagle Act Determination	Notes / Documentation
ESA listed species	species not present	No effect	
critical habitat	no critical habitat present	No effect	
bald eagle	unlikely to disturb nesting bald eagles; does not intersect with an eagle concentration area	No Eagle Act permit required	No nests within 660' and not within a concentration area.

Click along any of the rivers in the general area of your project site, and it will open an Adobe PDF format map.

Within the PDF map use the Marquee Zoom tool to zoom to your project area to determine if your project lies within fish and/or mussel designated critical habitat.



HELP / FAQ

MAPPING PORTAL

Layers

Bald Eagle

Eagle Nests

Eagle Nest Buffers 330'/660'

Waterbirds

Colonial Waterbirds 2013

Chesapeake Bay Herons 2013

Colonial Waterbirds 2008

Colonial Waterbirds 2003

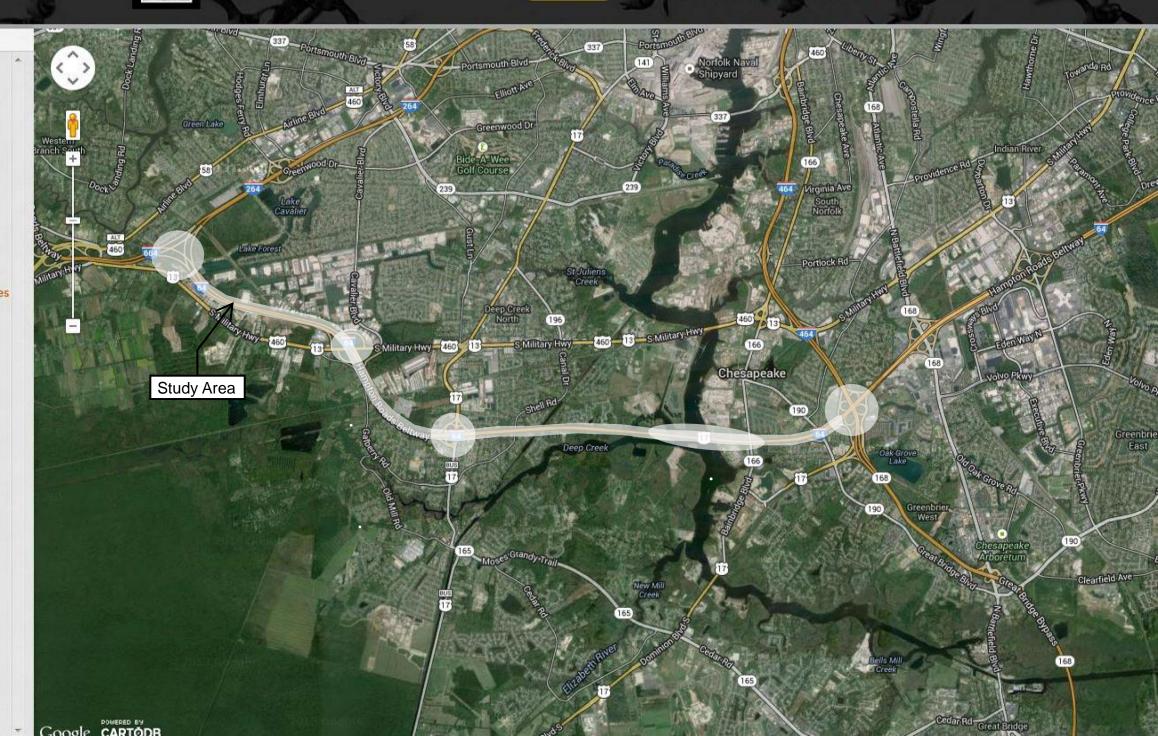
Osprey

OspreyWatch Nests

Chesapeake Bay Osprey Nests 1995-1996

Other Species

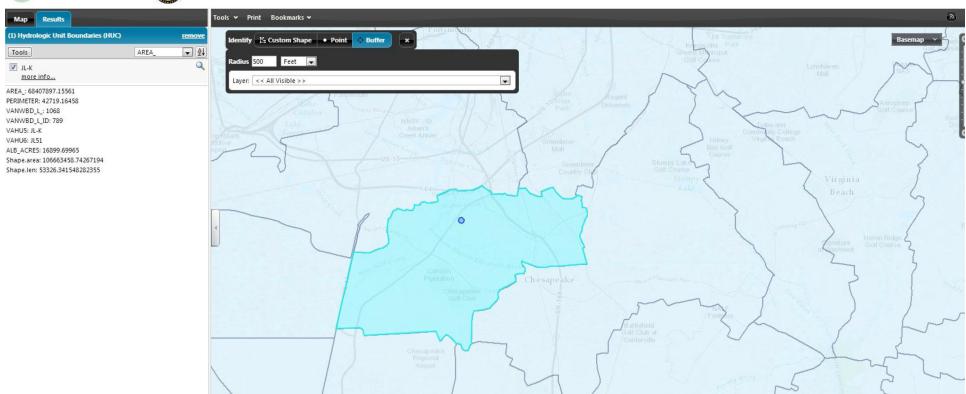
Nightjar Survey Network Routes





APPENDIX G: DCR-NHP DATABASE SEARCH





Natural Heritage Resources

Your Criteria

Watershed: 02080208 - Hampton Roads

Subwatershed: JL51 - Southern Branch Elizabeth River-New Mill Creek

Search Run: 9/24/2013 16:18:54 PM

Click scientific names below to go to NatureServe report.

Click column headings for an explanation of species and community ranks.

Common	Scientific Name	<u>Global</u>	<u>State</u>	Federal Legal	State Legal	Statewide
Name/Natural		Conservation	Conservation	<u>Status</u>	<u>Status</u>	Occurrences
Community		Status Rank	Status Rank			
Hampton Ro	ads					
Southern Branc	h Elizabeth River-	New Mill Creek				
LEPIDOPTERA	(BUTTERFLIES &	& MOTHS)				
Little Metalmark	<u>Calephelis</u>	G4	S1	None	None	11
	<u>virginiensis</u>					
King's	Satyrium kingi	G3G4	S2	None	None	8
Hairstreak						
MAMMALS						
Dismal Swamp	<u>Sorex</u>	G5T4	S2	None	LT	8
Southeastern	<u>longirostris</u>					
Shrew	<u>fisheri</u>					
VASCULAR PLA						
Raven's	Ludwigia ravenii	G1G2	S1	SOC	None	7

Common	Scientific Name	<u>Global</u>	<u>State</u>	Federal Legal	State Legal	Statewide
Name/Natural		Conservation	Conservation	<u>Status</u>	<u>Status</u>	Occurrences
Community		Status Rank	Status Rank			

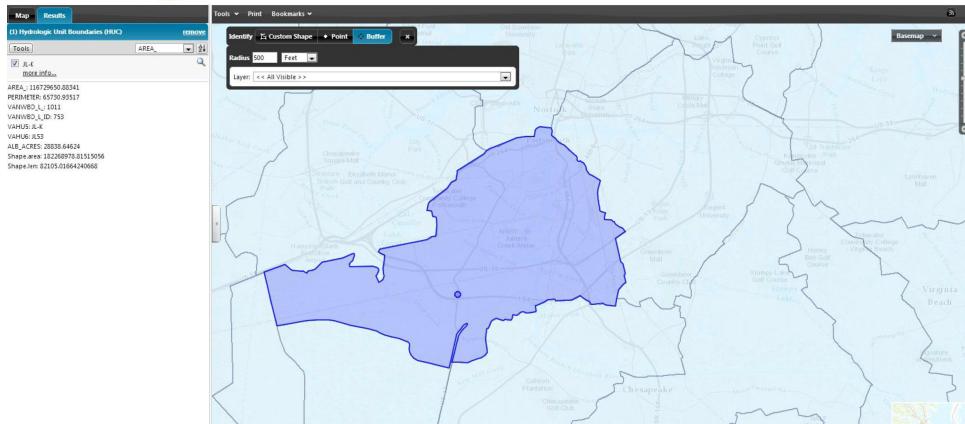
Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.

For Additional Information on locations of Natural Heritage Resources please submit an information request.

Seedbox

To Contribute information on locations of natural heritage resources, please fill out and submit a <u>rare species sighting form</u>.





Natural Heritage Resources

Your Criteria

Watershed: 02080208 - Hampton Roads

Subwatershed: JL53 - Southern Branch Elizabeth River-Deep Creek

Search Run: 9/24/2013 16:15:03 PM

Click scientific names below to go to NatureServe report.

Click column headings for an explanation of species and community ranks.

Common Name/Natural Community	Scientific Name	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences
Hampton Ro	ads					
•	h Elizabeth River	-Deep Creek				
LEPIDOPTERA	(BUTTERFLIES	& MOTHS)				
Yucca Giant	Megathymus	G5	SH	None	None	2
Skipper	<u>yuccae</u>					
King's	Satyrium kingi	G3G4	S2	None	None	8
Hairstreak						
MAMMALS						
Dismal Swamp	Sorex	G5T4	S2	None	LT	8
Southeastern	<u>longirostris</u>					
Shrew	<u>fisheri</u>					
REPTILES						
Canebrake	<u>Crotalus</u>	G4T4	S1	None	LE	19

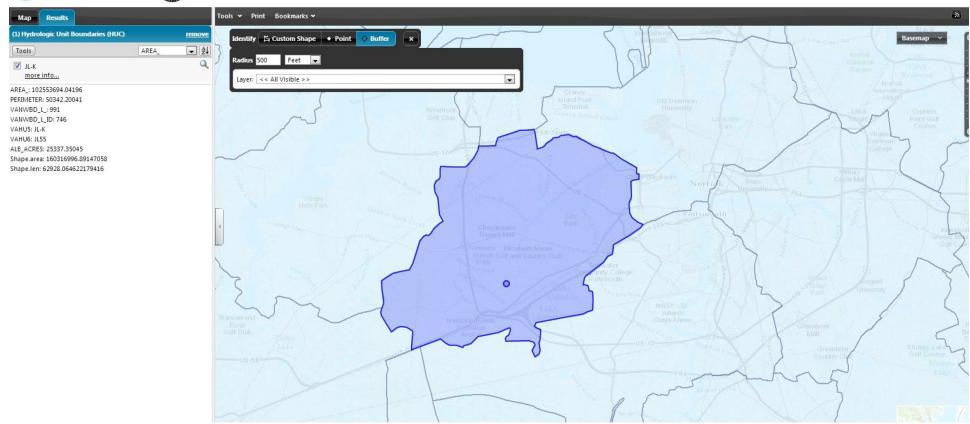
Common	Scientific Name	<u>Global</u>	<u>State</u>	Federal Legal	State Legal	Statewide
Name/Natural		Conservation	Conservation	<u>Status</u>	<u>Status</u>	Occurrences
Community		Status Rank	Status Rank			
Rattlesnake	<u>horridus</u>					
	[Coastal Plain					
	population]					
VASCULAR PLA	ANTS					
Big gallberry	<u>llex coriacea</u>	G5	S2	None	None	9
Raven's	Ludwigia ravenii	G1G2	S1	SOC	None	7
Seedbox						
Lax Hornpod	<u>Mitreola</u>	G5	S1	None	None	9
	<u>petiolata</u>					
Walter's	<u>Paspalum</u>	G4?	S2	None	None	13
paspalum	<u>dissectum</u>					
Fringed yellow-	Xyris fimbriata	G5	S1	None	None	4
eyed grass						

Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.

For Additional Information on locations of Natural Heritage Resources please submit an information request.

To Contribute information on locations of natural heritage resources, please fill out and submit a <u>rare species sighting form</u>.





Natural Heritage Resources

Your Criteria

Watershed: 02080208 - Hampton Roads

Subwatershed: JL55 - Western Branch Elizabeth River

Search Run: 9/24/2013 16:17:33 PM

Click scientific names below to go to NatureServe report.

Click column headings for an explanation of species and community ranks.

Common Name/Natural Community	Scientific Name	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences
Hampton Ro	ads					
	Elizabeth River					
AMPHIBIANS						
Oak Toad	<u>Anaxyrus</u>	G5	S2	None	None	9
	<u>quercicus</u>					
BIRDS						
Great Egret	Ardea alba	G5	S2S3B,S3N	None	None	11
Peregrine	<u>Falco</u>	G4	S1B,S2N	None	LT	26
Falcon	<u>peregrinus</u>					
MAMMALS						
Dismal Swamp	<u>Sorex</u>	G5T4	S2	None	LT	8
Southeastern	<u>longirostris</u>					
Shrew	<u>fisheri</u>					

Common	Scientific Name	<u>Global</u>	<u>State</u>	Federal Legal	State Legal	Statewide
Name/Natural		Conservation	Conservation	<u>Status</u>	<u>Status</u>	Occurrences
Community		Status Rank	Status Rank			
NON-VASCULA	AR PLANTS					
Peatmoss	<u>Sphagnum</u>	G4	SU	None	None	1
	<u>flavicomans</u>					
REPTILES						
Canebrake	<u>Crotalus</u>	G4T4	S1	None	LE	19
Rattlesnake	<u>horridus</u>					
	[Coastal Plain					
	population]					
VASCULAR PLANTS						
Lax Hornpod	<u>Mitreola</u>	G5	S1	None	None	9
	<u>petiolata</u>					
Elliott's Aster	<u>Symphyotrichu</u>	G4	S1	None	None	4
	m elliottii					

Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.

For Additional Information on locations of Natural Heritage Resources please submit an information request.

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